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THE

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF MUSCLE TONE,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

BY S. A. KINNIER WILSON, M.D., B.Sc. EDIN., F.R.C.P. LOND.,

PHYSICIAN FOR OUT-PATIENTS, NATIONAL HOSPITAL, QUEEN-SQUARE; JUNIOR NEUROLOGIST, KING'S COLLEGE HOSPITAL; CONSULTING NEUROLOGIST, METROPOLITAN ASYLUMS BOARD.

LECTURE I.*

MR. PRESIDENT AND GENTLEMEN,—It is my first duty to express to you, Sir, and to the Council of the College, the gratitude I feel in being honoured by the request to deliver the Croonian Lectures.

On not a few occasions within recent years the lecturer has selected a subject dealing with one or other aspect of the central nervous system, and for me the choice has been to some extent decided by the fact that for a long time the question of the possible functions of, and the diseases possibly to be assigned to, the corpus striatum has occupied my attention.

Twenty years have elapsed since there was admitted into the National Hospital under the care of Sir David Ferrier (whose house physician I then was) a young woman whose case proved to be the first adequately recognised as belonging to the group known as progressive lenticular degeneration, a disease in which unquestionably the most striking pathological feature is a disintegration of the corpus striatum. The impetus originally given to the study of this part of the brain by the work of a few observers abroad and at home has been vastly augmented during the last decade, till now the student of the subject is like to be bewildered by an unbelievably extensive literature, and has at his disposal a plethora of clinical material, due in major degree to the widespread occurrence of epidemic encephalitis and of sequelæ of that affection closely resembling paralysis agitans—a reputedly striatal disease.

Notwithstanding the abundant opportunities for investigation thus afforded, finality is far indeed from being reached in respect both of the pathology and the physio-pathology of the symptoms attributed to affections of the corpus striatum, and mere speculation is correspondingly rife. By way of a single illustration, motor symptoms as widely divergent as the complexity of an elaborate tic and the simplicity of a single muscle twitch or myoclonic contraction, as heterogeneous as palilalia and micrographia, are alike set down to striatal disease. Now, the corpus striatum is so situated that traumatic lesions are not calculated to produce any clear-cut picture of its symptomatology; its vascular supply is not derived from a single source; the morbid processes often involving its cell- and fibre-systems (e.g., that of epidemic encephalitis) are not restricted to the ganglia in question; the immediate vicinity of the corticospinal tracts sometimes renders it uncertain, in disintegration cases, whether there is not also concomitant interference with the function of these; even in Huntington's chorea, confidently regarded as a striatal affection because of the outfall of cells in the corpus striatum found with some frequency, every one knows that the cerebral cortex is also simultaneously implicated.

For these and a number of other reasons the ganglia situated in the base of the brain still, to a large extent, retain the characteristic of basements—viz., darkness. Since hypotheses erected on a still uncertain pathology have altogether outstripped clinical analysis, I have undertaken an objective investigation of various symptoms of a motor order some of which are assigned by many, on insufficient or erroneous grounds, as I shall endeavour to prove, to striatal disease. The need for further analysis along clinical lines is pressing, as will appear in the course of these lectures. The title has been deliberately chosen to avoid giving the impression, which might otherwise be gained, that the clinical phenomena to be considered are in my view and without comment to be set down to striatal disease and to that alone. This study, then, is concerned with the symptomatology of some affections commonly called "striatal," and with some types of movement commonly called "involuntary," as well as with certain problems arising therefrom.

THE SYNDROME OF THE CORPUS STRIATUM.

In 1912, as a result of work on the disease to which the name of "progressive lenticular degeneration" was given, the following syndrome of the corpus striatum was put forward:

> "In pure, uncomplicated, bilateral lesions of the lenticular nucleus, and more generally of the corpus striatum, provided they are of sufficient size and of adequate duration, the clinical symptoms are bilateral involuntary movements, practically always of the tremor variety; weakness, spasticity, or hypertonicity (sometimes spasmodic contractions), and eventually contracture of the skeletal musculature; dysarthria or anarthria and dysphagia, and a degree of emotionalism; but without any sensory disturbance, without any true paralysis, and without any alteration in the cutaneous reflexes. If the abdominal reflexes are absent (apart from muscular rigidity), or the plantars of extensor type, then the syndrome is no longer pure."

While subsequent research has fully confirmed the general accuracy of this description, further investigation has filled in certain points then left more or less open, while in other respects, as we shall see, a more ingoing analysis of the symptoms then specified is now required.

In the same monograph the considerable resemblance between progressive lenticular degeneration and paralysis agitans was more than once alluded to, and approximate similarity of the pathology of the two conditions was reasonably surmised. This expectation is now known to have been correct, the essential pathology of Parkinson's disease consisting in degeneration of certain striatal cells and fibre-systems, and of parts of the efferent system of the same ganglion. Since progressive lenticular degeneration is comparatively rare, while Parkinson's disease and the Parkinsonian syndrome are common, we may take the latter as a working example of a mainly striatal malady.

During the last few years a tendency to schematic elaboration of alleged striatal symptoms on an ever-increasing scale has become an unreasonable feature of the literature of the subject, yet the cardinal symptomatology may still be summed up in three words: variability in muscle tone (dystonia), the appearance of "involuntary" movements, and the seeming absence of "true paralysis." As the last of these requires qualification and explanation, we may begin our study with it.

THE "VOLUNTARY" MOTOR SYSTEM.

The term "voluntary," applied to movements, is in constant employment, but of elusive connotation. At a later point we may have opportunity to examine its meaning more closely; suffice it for the moment to say that "voluntary" movements are not *sui generis* in the sense of constituting a class apart; they are equivalent to "least automatic" movements, and all gradations may occur from "most automatic" to "least automatic." In objective characters they are not to be distinguished from other types of movement, equally coördinated and apparently purposeful, from which the element of "volition" is nevertheless awanting. No single criterion of an objective clinical kind (by string-galvanometer

* Lectures II., III., and IV. will appear in subsequent issues.

methods or otherwise) leads to differentiation; the "will" makes a subjective though not an objective contribution to a movement. Ordinarily speaking, we are in the habit of regarding as "voluntary" those movements which we have reason to believe are effected through the corticospinal or pyramidal tracts, to some extent because in the experimental animal movements (not, as a fact, strictly comparable to those of "volition") can be produced electrically via these tracts. The falsity of this deduction is apparent when we remember the ease with which movements can be electrically elicited from other paths never considered "volitional."

Consciously, we are in complete ignorance of the specific muscular units effecting a "voluntary" movement. Consciousness knows only movements and terminal joint displacements produced by movement, and this has sometimes been taken to argue the representation of movements only in the cerebral convolutions. Evidence will be adduced later which, I believe, disproves the contention. The point at present is, that a very large part of every "voluntary" movement is both "involuntary" and outside consciousness. The expression "voluntary muscular contraction" must therefore be regarded more as a *façon de parler* than a term of differentiating quality.

Similar difficulties follow in respect of the term "paralysis," which is equally vague and open to misinterpretation. The clinician admits degrees of "paralysis," but would have hesitation in defining with precision exactly what they signify. In a given "voluntary" movement the elements of power of muscular contraction, appropriate coördination of muscular units, rate of contraction, accuracy of timing, estimation of amount of contraction required, are among some of the factors in the attainment of a perfect end, and if in any of these the voluntary movement falls short it exhibits in that respect a degree of "paralysis" or "paresis." If a movement is normal except for its unusual slowness of accomplishment there is "paralysis" of normal rapidity of contraction. When, in the definition of the striatal syndrome cited above, mention was made of the "absence of true paralysis," the intention was to endeavour to separate the "paralysis" ensuing on lesions of the pyramidal system from the recognised "motor helplessness" of extrapyramidal cases, in which, as was shown, objective signs of involvement of the pyramidal paths (absence of the abdominal reflexes, presence of the Babinski plantar responses) were awanting. It was then suggested that the discovery of an appropriate expression for extrapyramidal "paralysis" was a desideratum.

As it is, such terms as "weakness," "paralysis," "paresis," and even such apparently more precise expressions as "direct weakness of the motor impulse to the agonists" (Foerster), have, in fact, little if any specificity, however convenient they may be. If the word "paralysis" is indispensable, it may be justifiably employed to indicate imperfection of movement in respect of *any* of the components of a normal movement, and cannot be confined to questions of muscular strength or power alone.

It became apparent to me some time ago that in order to determine with certainty whether any particular kinds of movement were as a fact impaired or lost in disease of the corpus striatum a complete examination of the motor phenomena from the point of view of normal muscular action of various types would have to be undertaken. The reader of the literature of the corpus striatum will find himself confronted by statements as to loss of movements which in the absence of definitions or expositions are exceptionally confusing. Thus he will be told there is, inter alia, "loss of primary automatisms" (C. and O. Vogt), "loss of associated movements" (Foerster), "loss of individual movements" (Jakob), "loss of the associated movements that accompany voluntary movements" (Stertz), "loss of primitive automatisms and of higher coördinations" (Binswanger), "loss of (palæokinetic) automatic and associated types of movement" (Ramsay Hunt), and so forth. (I say nothing of the attempts to localise these and other motor defects in different sections of the ganglia in question.) Accordingly, a scheme of examination has been devised and applied to a large number of cases, mainly of the Parkinson group, but including also a typical case of progressive lenticular degeneration and a number of choreics of the Sydenham, Huntington, and senile varieties, as well as cases of athetosis. The terms used will be explained as they occur.

CLASSIFICATION OF MUSCLES IN A NORMAL ACT.

A physiological classification of the various muscles taking part in a simple movement of the type called "voluntary" divides them into the following groups: (1) Prime movers or agonists (protagonists); (2) synergic muscles, or synergists; (3) fixation muscles, or fixers; (4) antagonists.

This classification differs somewhat from those of Winslow and Duchenne, and follows the much more recent one of Beevor. For simplicity's sake it may be modified to include (2) and (3) under the one heading of synergists. Thus in the elementary illustration of the movement for closure of the fist the agonists or prime movers are the flexors of the fingers and thumb; the synergists are the extensors of the wrist, while the antagonists are the extensors of the fingers. Beevor showed that in firm closure of the fingers the triceps and biceps act as fixation muscles when a certain measurable degree of contraction of the agonists is attained, and regarded the "fixation group" as fulfilling an essential part in all movements in distinction from the synergists, which he defined as "the muscles which are brought into the combination when a prime mover has, by passing over two or more joints, two or more actions of which only one is required; the synergics are the muscles which neutralise these undesired actions." In the above-given example the synergic muscles, the wrist extensors, serve to obviate flexor deviation of the wrist by the contracting long finger flexors, hence in reality their function is one of fixation. It is practicable, therefore, to include as synergists such muscles as contract (invariably or variably) either to fix joints other than that, or those, actively engaged in the particular movement required, or to enable the prime movers to execute their function with a maximum of effect.

Using the attribute "synergic" in this specific way, I do not speak of "synergic movements" or "movement synergias." In a *whole* movement *part* only is synergic; I shall not use the term to express a complete movement, or a movement concurrent with another. The necessity of this restrictive definition becomes apparent in view of the meaninglessness of any wider application. All the units in a voluntary movement coöperate, even though some may constitute a "coöperation of antagonism," as Hughlings Jackson might have said. If synergy is synonymous with coöperation it is otiose. There is the more need for terminological clarity at this point in that Tilney, whose contributions to a difficult subject deserve respectful consideration, appears inclined to employ the term "synergic unit" to include *all* the muscular components in a given movement—thus eliminating the muscular distinctions drawn above. For the present, however, it will be convenient to keep closely to a classification which has definite clinical merit.

"VOLUNTARY" MOVEMENT IN STRIATAL DISEASE.

(1) *Strength or Weakness of Movement.*

The customary clinical tests of muscular power have been employed in this connexion. They lack absolute value, but they possess considerable relative value if carried out by an examiner of experience, whose subjective standard is based thereon. Various rather elaborate methods have been devised to establish a scale of strength; the only apparatus I have employed has been the dynamometer, the same instrument always being used, and in two ways—either by a succession of grips first on one side and then on the other, or by alternate right and left grips. The most

useful information has been obtained by selecting unilateral Parkinsonian cases, care being exercised rigorously to exclude those in which pyramidal function was not considered normal.

For illustration only three cases need be cited.

1. Left-sided unilateral case.

Consecutive.		Alternate.	
R. 150	L. 104	R. 145	L. 100
144	110	140	100
136	100	140	105
134	114	136	102

2. Right-sided unilateral case.

Consecutive.		Alternate.	
R. 82	L. 98	R. 71	L. 104
84	92	62	90
84	90	82	82

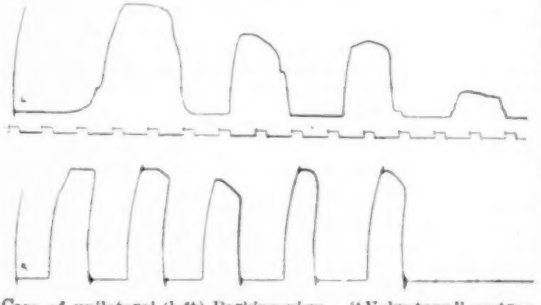
3. Bilateral case.

Consecutive.		Alternate.	
R. 72	L. 48	R. 52	L. 40
65	45	65	42
72	38	42	45

From an analysis of many similar records and a comparison with normal cases the disparity between the two sides in unilateral cases is clearly greater than can be accounted for by the natural right- or left-handedness of the individual concerned, and, also, in bilateral cases the reduction of power, as estimated by the dynamometer, is unmistakable. *The conclusion is that relative motor weakness is to be expected in striatal cases of the Parkinsonian type, varying within wide limits but definite enough.* This is in accordance with the experience of James Parkinson himself, who, in his celebrated "Essay on the Shaking Palsy," mentioned in his definition the occurrence of "lessened muscular power."

Another point brought out by dynamometer records concerns the question of progressive weakening in a series of similar movements. This is stated to be a characteristic of striatal affections, but my observations do not substantiate it; at least, not without some qualification. A glance at the above figures will show that in the unilateral instances similar movements (hand-grasping) are at first relatively better

FIG. 1.



Case of unilateral (left) Parkinsonism. "Voluntary" contractions of right (lower tracing) and left (upper) quadriceps.

sustained on the *affected* than on the unaffected side. Only, however, for a few consecutive "voluntary" movements is this usually found; in a longer series the affected limb undoubtedly tends to weaken more than the other. This is in accordance with the remark of a right-sided Parkinsonian girl, who said: "I could hit anyone hard with the right hand several times quickly, but I couldn't do it slowly, or keep it up." If the arm is actively flexed against resistance at the elbow it eventually tires more readily than the normal. Successive movements of supination and pronation against resistance exhibit a similar tiring. If the patient stands and swings the extended arm in a wide circle from the shoulder reduction of the extent of the swing is eventually visible on the affected side in comparison with the other.

A good way of demonstrating the same phenomenon is by placing the patient in the recumbent position and getting him to make single consecutive "voluntary" contractions of the quadriceps group on the front of the thigh. The action of gravity is excluded and there is no displacement at the joint concerned, since he is requested not to lift his heel off the couch. From Fig. 1 it will be seen that on the right (normal) side the patient was able to make five successive "voluntary" contractions of the quadriceps in slightly over 11 seconds, the last being as good as the first; on the left (Parkinsonian) side there were four contractions in 12 seconds, and they exhibit a progressive reduction in extent, much more noticeable, however, in the fourth than in the first three. Another tracing from a less severely affected patient (Figs. 2 (A) and 2 (B)) shows five quadriceps innervations ("as quick as you can") in five seconds, all of normal amplitude, as compared with five in eight seconds, very limited in extent, on the affected (left) side.

FIG. 2 (A).

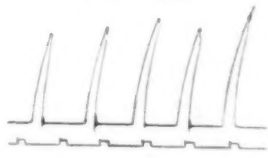
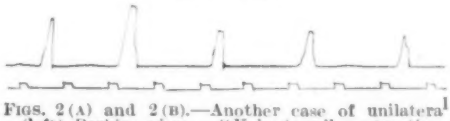


FIG. 2 (B).



FIGS. 2 (A) and 2 (B).—Another case of unilateral (left) Parkinsonism. "Voluntary" contractions of right (A) and left (B) quadriceps.

The records from a well-marked case of unilateral Parkinsonism furnish clear evidence of similar weakness in respect of the "voluntary" movements of the long flexor of the forefinger (Figs. 3 and 4). On the right (unaffected) side the tracing reveals a free, quick, and wide movement of the finger, three consecutive and smoothly coördinated innervations taking place in less than three seconds. By comparison, three similar movements of the left forefinger ("crooking" of the finger) are very slow, extremely limited, and irregular, requiring no less than 17 seconds for their completion.

Among the movements particularly apt to exhibit weakness are those of separation of the fingers (interosseal). The Parkinsonian cannot readily "spread" his fingers, feebleness and a certain lack of precision being often seen; nor can he approximate the tip of the thumb and that of each of the other fingers in a quick, strong, and precise fashion. Abduction of the little finger is not infrequently almost nil. Movements of the tongue, too, both inside and outside the mouth, are especially prone to exhibit the same characteristics. It is protruded very imperfectly, and is not infrequently "bitten" in the course of mastication. Speaking generally, the defect is chiefly seen in small-muscle movements, those of larger muscular masses being less obviously imperfect, one reason for which may be simply that gradations of movement are more easily followed by the clinical eye in small than in large muscles, and minor variations of power more easily estimated (see also below).

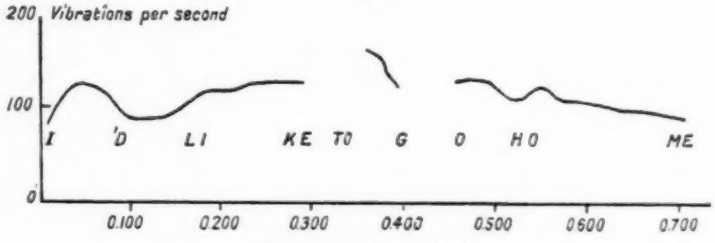
A further example of this imperfection of "volitional" movement in the smaller muscles is provided by those concerned in phonation and articulation. A common feature of the phonation process in paralysis agitans, progressive lenticular degeneration, and other striatal syndromes is the "mono-tonous" voice. Parkinsonians are compelled to give up singing. As Brissaud said, these patients lose "le chanson du langage," the inflections and modulations which characterise normal pronunciation. Their vocalisation is one long monotone. I asked Prof. E. W. Scripture to take records for me, one of a normal voice and one of a severe case of Parkinsonism selected for the purpose. The latter, I believe, is the first record of the kind that has been taken. The striking

differences between the two can be realised by comparing Figs. 5 and 6. The sentence enunciated in each instance was "I'd like to go home," and while in both the duration was approximately 0·7 seconds, the record of the Parkinsonian is distinguished by complete absence of flexibility, measured in vibrations per second. In other words, here is evidence of imperfection of "voluntary" movement in a well-defined physiological group of small muscles, revealed by defect of range and of flexibility at a quick rate

FIG. 3.

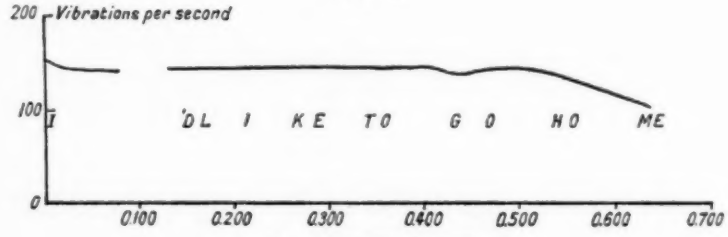
Case of unilateral (left) Parkinsonism. Normal "voluntary" contractions of right long flexor of forefinger.

FIG. 5.



See explanation in text.

FIG. 6.

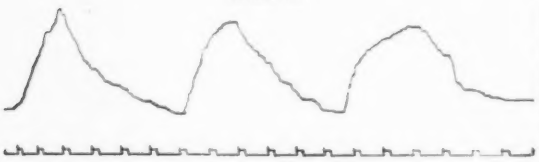


See explanation in text.

(that is, the record reveals the presence of muscular rigidity). To dissociate the quotas of these elements may be somewhat difficult, but in so far as they constitute a departure from normal "volitional" movement of the apparatus in question, they indicate a degree of motor "paresis" in the sense specified above.

Reference may now be made to the ocular muscles. While as a general rule the external ocular muscles of the Parkinsonian are supposed to exhibit no motor

FIG. 4.



Same as Fig. 3. Slow and limited "voluntary" contractions of left forefinger (affected).

abnormality, in a large number of instances a "punctuate" movement of lateral conjugate deviation is seen. The eyes move in a somewhat jerky fashion with fractional pauses at intervals in the course of the deviation. Such "punctuate" movement is, however, by no means confined to cases of the kind we are considering. In some respects it partakes of the nature of the "cog-wheel" phenomenon described below, and is probably to be assigned rather to a disorder of muscle tonus than to weakness of innervation. A more interesting observation is one that has long been a commonplace—viz., defect or failure of convergence. A high percentage of cases of paralysis agitans (and in this respect it is obviously advisable to deal for the moment only with idiopathic cases) reveal inability to converge, one or other eye usually swinging out, or at least failing to move inwards, at the appropriate moment. In one case the patient remarked spontaneously that one of his earliest symptoms was inability to light his cigar, since he could not with accuracy bring the lighted match to the end of it—a convergence-accommodation defect. Peripheral paresis of the internal recti being excluded by the normal participation of the muscles in other ocular combinations, we have here a fairly definite "paralysis" of a specific synkinesis or movement-combination—viz., that of the above extrinsic muscles with the ciliary muscles and the sphincters of the irides. (This synkinesis is unusual in that it comprises a union of somatic-motor and viscero-motor elements, but the fact that the sphincter iridis is phylogenetically a striate muscle must not be overlooked.)

Of its occurrence more than one explanation is possible.

In elderly folk the convergence-accommodation mechanism naturally tends to functional involution, but apart from this, its "paresis" occurs in Parkinsonians who are not old in years, while the symptom may be observed in post-encephalitic Parkinsonism as a solitary ocular defect, the peripheral visual apparatus being in other respects normal. Here, evidently, is a loss of a particular movement of a set of muscles with preservation of other movements of the same muscles. Hughlings Jackson held there are differences of "evolutionary rank" of movements of the same muscles, and, regarding convergence-accommodation as a very "special" movement, was rather at a loss to account for its retention in ordinary hemiplegia. Curiously enough, he does not appear to have viewed its bilaterality as an explanation for that pyramidal disease; he came, rather, to the conclusion that "convergence, as it has to do with distances, belongs to the locomotor series (cerebellum) and not to the tactual series (cerebrum)." His inference was that the movements of convergence are chiefly represented along with movements of the spine, arms, and legs for locomotion. Distance appreciation is doubtless connected with locomotor functions, but any supposition that the Parkinsonian failure of convergence is linked to the locomotion disorder is perhaps rather far-fetched, interesting

though such a speculation may be. In a special series of observations I have been unable to satisfy myself that precisely those cases with convergence defect exhibit the most noteworthy disturbance of the "locomotor series." Be this as it may, the frequent impairment of the mechanism under consideration provides further proof of weakness of "volitional" movement in striatal disorder.

Weakness of closure of the eyes is fairly often encountered, especially in post-encephalitic cases. The patient appears unable to "screw the eyes up tightly"; the orbicular muscles usually pass into a state of blepharospasmic trembling. If the eyes are in fact closely shut for a moment or two he not infrequently seems to be unable to maintain the voluntary contraction tonically. The orbicular muscles of the mouth may act in a similar fashion; the Parkinsonian tends to have his mouth open or his lips apart, and cannot always "purse them up" strongly, as does the normal individual. If he does, he cannot always maintain the tonic contraction.

I attach no little importance to this *weakness of maintenance of contraction*, which, for that matter, can be demonstrated also in other small muscle movements, and is found (as I have shown) in cases of progressive lenticular degeneration as well. It furnishes proof of the inaccuracy of the common statement that Parkinsonian movement is always characterised by slowness of relaxation. Further, it is a clinical symptom the very opposite of that imagined by some to be typical of extrapyramidal disease—viz., so-called "perseveration" or "tonic innervation." I shall return to this question at a later stage.

As far as movements at large joints are concerned weakness is much less noticeable. Movements of trunk, head, and proximal limb segments against resistance are sustained with no little force, nor is restriction of range as a rule in evidence, at least contrasted with that of small muscles. I have never seen actual *loss* of movement of a big joint in Parkinsonism such as may be observed in any recent and severe hemiplegia, or, of course, in any paralysing lesion of the lower motor neurone. If the patient's limb is passively put into a position half-way towards that which he is asked to assume actively, it will often be found to execute the movement with greater power. Thus, if with leg fully extended he is required to flex at the knee, he will accomplish the movement more forcefully should the knee be first passively flexed to a right angle. Foerster appears to claim this phenomenon as an alleged peculiarity of striatal affections, but it is in reality a question of mechanical leverage—the adoption of an optimum position no less characteristic of normal musculature than of diseased.

To decide whether in the striatal affections exemplified by paralysis agitans and its congeners any predilection type of "paralysis" or "paresis" obtains, as we know is the case in pyramidal affections, we have at our disposal data of the varieties illustrated above, and *the general conclusion seems justified that those musculatures whose mass is small are found to exhibit feebleness of "voluntary" contraction, and that, for the body as a whole, this feebleness is in inverse ratio to the size of the muscle or muscles concerned.* A generalisation of this description, however, should not be taken too literally or mathematically, though I believe it to be clinically applicable.

We have seen that in regard to laryngeal, interosseal, facial, glossal, ocular and other small musculatures the contention seems substantiated. In respect of their movements there is found in a large number of instances such lessening or reduction of range, flexibility and quickness of contraction, such fatigability, such imperfect maintenance of contraction (in some instances) as constitute a definite enough "paresis" or "paralysis." When a hemiplegic patient slowly and laboriously extends his fingers we do not hesitate to describe the movement as "weak" or "paresed," and no adequate reason can be advanced for refusing the same descriptive epithet to the slow, laborious, and limited "spreading" of the Parkinsonian fingers. Dynamometer records prove the existence of muscular weakness in moderately severe striatal cases, hence the non-specificity of the term "paralysis" already alluded to.

With the exception of the ocular musculature—where the defect is largely if not entirely confined to the convergence-accommodation mechanism—the small muscles in the distributions mentioned above are weak for all movements. They are muscles implicated in the execution of the most delicate of acquired movements, especially so in the case of fingers and phonation-articulation apparatus (larynx, tongue, lips); muscles in which fractional gradations of innervation are essential for the production of the finest changes, as in speaking and in precise and exact finger movements. This highly special class of acquired "voluntary" movement, then, suffers more than any other in diseases of the group in consideration, and offers in this connexion no essential difference from what obtains in pyramidal cases, except, it may be, in regard to the speech muscles. These are less likely to suffer in hemiplegia, owing to their bilateral innervation. Consonantly with this, unilateral Parkinsonian cases may exhibit little speech—i.e., phonation-articulation—disorder. The loss of highly specialised, recently acquired movements which Hughlings Jackson thought so characteristic of hemiplegic cases is parallelled by their impairment in Parkinsonian cases. One has only to observe the Parkinsonian fumbling with his buttons or his necktie, or to ask his patient whether he is still able to shave himself, to be assured of this. (Since the advent of the safety razor the argument has been rather "side-stepped.")

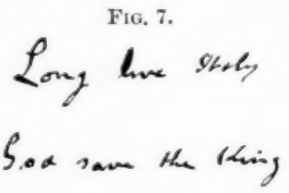
The cause or causes of the motor impairment exemplified in this section will be more conveniently discussed after certain other features of the "voluntary" nervous system in striatal disease have been examined.

Micrographia.

Under this same heading of "Strength or Weakness of Movement," the behaviour in paralysis agitans of the fine acquired movements of writing may be appropriately considered. The disturbance of movement known as "micrographia," described years ago by Arnold Pick, but recently resuscitated and alleged to be characteristic of striatal affections by Bernhard, Bing, and others, and indicative of actual paresis by Foerster, deserves remark. The symptom has interested me ever since the appearance of Pick's original paper in 1903 and long before attention was directed more specifically to the corpus striatum. The condition consists, as its name implies, in an obvious reduction in size of the lettering of the writer in comparison with his calligraphy before the development of the organic lesion effecting the change. It is writing in miniature. According to my own observations a distinction should be drawn between the micrographia which is as obvious at the beginning of a sentence as at its close, and that which consists rather in a tailing off into a smaller lettering because of fatigue or other inability to maintain the range voluntarily. In respect of the former variety (to which perhaps the term might be restricted) in my experience *it is certainly neither confined to striatal cases nor in any sense pathognomonic of them.* Bernhard commits a *petitio principii* by confining his researches to cases in which striatal disorder has been evident or presumed. On the contrary, it may be observed in typical form in hemiplegia and other corticospinal conditions. For example, the writing reproduced in Fig. 7 is that of a patient who developed a right brachial monoplegia of cerebral syphilitic origin, from which a good degree of recovery was made. He was a professional mandolin player and complained of two residual symptoms: (1) he had lost all facility in making the fine movements of striking the mandolin strings with his "plectrum," though otherwise he could use the arm with ease; (2) since the "stroke" his handwriting had become unaccountably small in

comparison with his previous style. The loss of the acquired movements of "plectrum"-striking constitutes a limb-kinetic apraxia in Liepmann's sense and definitely suggests a cortical origin for the disorder, while the concomitant and otherwise entirely monosymptomatic micrographia can legitimately and confidently be assigned in this case to disturbance of cortical function. From a case of cerebral arteriosclerosis the writing seen in Fig. 8 was obtained. It was that of a patient with slight right hemiplegia and slight defect in speaking, and had been noticed since the onset of the right-sided weakness some months previously. No trace existed of the arteriosclerotic muscular rigidity often assigned (by Foerster and others) to striatal disease, nor any symptom of a kind that could be referred to the ganglion. On the contrary, the evidence pointed to implication of the cortex in part of he distribution of the left sylvian artery.

FIG. 7.



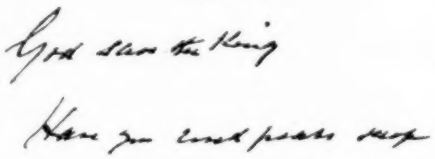
Micrographia in cerebral (cortical) neurosyphilis.

Taking next actual Parkinsonian cases, I have seen many in which severe striatal (or assumed to be striatal) symptoms have been unaccompanied by any micrographic disorder. Thus, the handwriting reproduced in Fig. 9 comes from a typical case of post-encephalitic Parkinsonism of an aggravated sort, the patient being one of the most immobile and rigid I have so far observed. When he was being tested with the dynamometer he did not reveal by a single muscular flicker otherwise the strong effort he was making with his right or left hand, but his calligraphy shows no departure, as far as size goes, from his previous normal. By way of contrast, however, the most pronounced micrographia in my collection is that of a lady who came under observation only a month or two ago, one of the encephalitis cases of the spring of 1924. Her Parkinsonism made its appearance in August of the same year, and her micrographia is such as to render her writing almost illegible (Fig. 10), yet, otherwise considered, the symptom-complex in her particular case is of only moderate degree.

For the understanding of this difficult and somewhat involved subject preconceived ideas as to the function of the corpus striatum or its symptomatology in diseased states must be avoided. Micrographia should not be divorced either from its opposite, macrographia, or from the frequent concomitant of macropsia or micropsia. As far as I have noticed, Bing only of recent writers refers to these, solely, indeed, to macrographia, which he calls "megalographia," and thinks is of cerebellar origin. He uses the illustration as an argument for the existence of symptomatological opposites between striatal and cerebellar disease. Recent contributors to the subject have quite failed to take into consideration the variety of cases in which micrographia may occur, and its not infrequent connexion with disorders of vision and of the muscular sense.

In a paper read in 1916 at the Congress of the Ophthalmological Society of the United Kingdom, and published in their Transactions, numerous instances were adduced of the association of micrographia or macrographia with the visual disturbance of dysmetropsia—the term proposed for departures from the normal either in the minus (micropsia) or the plus direction (macropsia)—and the occurrence of this visual defect at peripheral (lowest), cortical (middle),

FIG. 8.

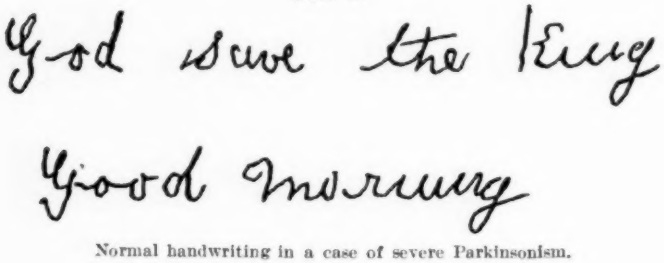


Micrographia in cerebral arterio-sclerosis (non-striatal).

and transcortical (highest) levels was fully exemplified, cases of hysteria, migraine, and cerebral tumours, of tabes dorsalis and disseminated sclerosis, &c., being selected for the purpose. With these clinical data before us, all that need now be said is that in cortical and transcortical conditions micrographia may be an accompaniment of macropsia, and, *mutatis mutandis*, macrographia of micropsia; or, alternatively, either variety of calligraphic defect may occur without visual disorder (as in the cases cited above). Again, micrographia often is met with where muscular rigidity is insignificant, as in some examples already given, and it may be seen in other instances where kinæsthetic factors have come into play. This latter association is of peculiar interest, for further details in regard to which the paper above referred to may be consulted.

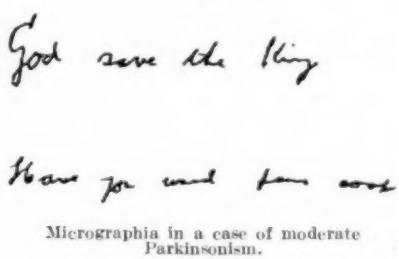
To explain its admitted, if far from constant, occurrence in paralysis agitans and post-encephalitic Parkinsonism, the following questions have to be answered: (1) Is it of transcortical, cortical, or subcortical origin, and (2) is it connected or unconnected with accommodation disorder? To take the latter first: Nearly all of the Parkinsonians with micrographia that have come under notice have exhibited impairment of the convergence-accommodation mechanism, but none of them has complained of the visual disorder I call dysmetropsia. Now our estimation of size can be shown to be regulated mainly by (1) retinal images and retinal disparation, (2) accommodation and convergence "effort," (3) certain psycho-physical factors (distinctness, relative size, light and shade, &c.). Paralysis or paresis of accommodation is often stated to be accompanied by micropsia, and spasm of accommodation by macropsia, but in innumerable instances I have satisfied myself that patients with one or both eyes under the influence of atropine are not aware of any dysmetropsic defect, and, further, in many cases of

FIG. 9.



Normal handwriting in a case of severe Parkinsonism.

FIG. 10.



Micrographia in a case of moderate Parkinsonism.

complete ophthalmoplegia externa and interna no such impairment is remarked. Besides, it is easy to show that in organic and non-psychical cases macrographia, not micrographia, is to be expected with micropsia. For these reasons one cannot feasibly link the micrographia of Parkinsonism to any defect of convergence.

As for the former of the questions stated above, an analogy from this same visual field is apposite. In different individuals the retinal image, retinal disparation, the kinæsthesia of accommodative effort (if there is such a thing), and the psychological factors already referred to briefly are all prominent in widely differing degrees, in the determination of the depth or distance of a visual object, and so of its size. Hence micropsia may result from lesions at one or other of three neural levels or, quite possibly, from lesions involving more than one. In a not dissimilar fashion we may discover the elements producing micrographia to have their anatomo-physiological site at one or other of the same three levels, or at more than one. Accordingly, we must take into account the possibility, as far as concerns Parkinsonian micrographia, of (1) infracortical disorders such as rigidity of antagonists; (2) central ("middle level") dysfunction, such as disturbance of pyramidal innervation for fine acquired movement; (3) "highest level," "transcortical" impairment, such as absence or diminution of the "will" to act, or the condition usually described as dyspraxia. Without further discussion in this place, enough has been said to prove that cortical and transcortical components may have as definite a share in the "lilliputian" symptom under review as those of lower level origin, and that *acceptance of the striatal theory, in any exclusive sense, is quite impossible.*

(2) *Beginning, Course, and Cessation of Movement.*

That the Parkinsonian is "slow off the mark" is matter of common observation. Recent measurements with special apparatus for muscular response to a single visual stimulus have given the figures of 0·24 seconds for normal individuals and 0·36 seconds for the subjects of paralysis agitans. With the comparatively simple recording methods which I have utilised myself the feature of slowness in starting and continuing movement has been abundantly exemplified (cf. Figs. 1, 2 (B), and 4). If the patient is at first able to make movements of practically normal rapidity ere long he becomes conscious of retardation. Thus in a well-marked unilateral (right) case the patient made a series of wheel movements of the extended right arm from the shoulder. For three or four complete revolutions the movement was normal, but it then became distinctly slower, the subject remarking spontaneously "it seems to require more effort of my will"; becoming ever slower, the revolutions ceased at the tenth time, whereas on the left they could be kept up indefinitely. Both in a clockwise and counter-clockwise direction the phenomena were similar. Slowness is so conspicuous a feature of all movements of the "volitional" order that it scarcely requires further illustration. It is none the less a variable feature. Apart from the fact already mentioned, that earlier movements may be accomplished in better time than later, the reverse occasionally is encountered, the rate improving slightly after one or two innervations. In all the actions of daily life, dressing, eating, &c., every Parkinsonian admits his unwonted delay in accomplishment. The "drag" is such as on occasion to bring volitional activity almost to a temporary standstill. Coupled with the retardation is a restriction in range and excursion to which allusion has already been made several times, and which is well exemplified in Fig. 11.

In a large number of cases, however, this slowness is more apparent than real, and is so declared to be by the patient himself. The characteristic slow, shuffling, and limited gait, reminiscent of the "démarche à petits pas" or brachybasia of the "lacunaire" or double hemiplegic (in which cases on occasion incidental involvement of the basal ganglia may occur), can be modified in a surprising fashion if the observer puts his arm inside the other's and invites him to step out. The brachybasia may then easily disappear. A member of our profession, suffering from paralysis agitans, made the curious remark to me that he found he could walk more quickly over the stones of a rocky sea-beach than on the flat, the reason probably being that he was compelled to take longer steps. Parkinsonians often run better than they walk, in this respect presenting an illuminating contrast to tabetics, in whom inability to run while still able to walk is an early sign I have frequently observed. They enter the out-patient room and come to the table with a little run. I have seen a subject of advancing paralysis agitans tuck up his feet and sprint along a garden path when progression at a walking pace was painfully slow. Another patient was actually able to proceed backwards, uphill, at a greater speed than forwards and on the level. James Parkinson gives a graphic description of more than one case in which "the inability for motion, except in a running pace, appeared to exist in an extraordinary degree." As a rule, this power of modification of an apparently hampered musculature is seen more in respect of the lower than of the upper extremities—a corollary, it may be, of the fact that the "voluntary" movements of the former are more, the latter less, "automatic." A remarkable circumstance connected with not a few cases of post-encephalitic Parkinsonism has been the variability in slowness and motor range-reduction at different periods of the day or night, at the instance of extrinsic or intrinsic stimuli, the action of which is far from being clearly understood. (In this connexion similar variability has been reported by one or two writers as taking place under the influence of hypnosis, but I am not in a position to add any personal contribution on this point. Improvement or disappearance of Parkinsonian micrographia under hypnosis has also been recorded.) At a hospital recently I saw a girl, suffering from typical and severe post-encephalitic Parkinsonism, who lay immobile in bed and whose movements in response to my requests were characteristically slow and laboured; yet I was assured her nurses had accidentally discovered that if she was "dumped" up and down on the bed several times in a sitting position she then was able to get up and walk round the ward normally! In the idiopathic disease such peculiar variability is far less in evidence, but if we connect the changeableness in movement described above for the idiopathic patient with the curious though rare phenomena of the post-encephalitic patient, we can only suppose the symptoms to depend less on structural lesions than on dynamic alterations of function, that from time to time innervation is facilitated by modification of the background of muscular hypertonus against which it is ever contending, that the tendency to "involuntary" contraction of the antagonists transiently relaxes. To these matters we shall return later. At any rate, we must concede the possibility of fluctuations in the muscular state greater than a glance at the seemingly immobile attitudes might lead us to imagine.

As for cessation of "voluntary" movement, my observations lend no support to the view according to which the muscles in action in Parkinsonian cases

FIG. 11.

Case of unilateral (right) Parkinsonism. Freehand to-and-fro movement of pencil from above down; L, normal; R, affected side.

may remain tonically contracted, perhaps for seconds, after the "voluntary" impulse has ceased. In no case have I been able to satisfy myself that any condition strictly analogous to "tonic innervation" occurs. By the latter expression is understood inability to decontract, to order or on a signal given, a "voluntarily" contracted muscle or group of muscles. Tonic innervation is of central origin, in the sense that the cases of it I have seen, and those reported by others, have all been due to cerebral lesions, but as far as the actual symptom of inability to relax a contracted muscular group is concerned, no clear clinical distinction can be drawn between it and the phenomenon commonly denominated myotonia. No criterion exists by which to judge when a contraction, "voluntarily" commenced, is prolonged sufficiently to be specified as "tonic," except that if it is maintained beyond the command to relax it is *ipso facto* pathological. Thus understood, tonic innervation in a mild form occurs in many morbid states (moderately severe hemiplegia, athetosis, &c.), but in my experience the phenomenon is so uncommon and uncertain in Parkinsonism as to be practically negligible. If the reader will look at Figs. 15† and 18, taken from cases of advanced bilateral post-encephalitic Parkinsonism, he will find proof of this. In one case, that of a young woman, voluntary action involving the hands and fingers was feeble and tremulous and rather limited in range, but after sustained "voluntary" contraction of the long finger flexors ("close the fist") and, synergically, of the wrist extensors, at the word "open" the long finger extensors instantly contracted and the wrist extensors instantly relaxed—that is to say, neither protagonists (prime movers) nor synergists exhibited any trace of tonic innervation (Fig. 15). In this respect the behaviour of the muscles is identical with that seen in any normal individual (Fig. 14). Similar records have been obtained for the action of trunk and neck prime movers, as well as for trunk synergists in arm movements (cf. Figs. 17 and 18).

(3) *Poverty of Movement.*

The term "poverty of movement" (Bewegungsarmut) has come into vogue to express the familiar symptoms of relative immobility and stationariness of position which are particularly characteristic of the subjects of the shaking palsy. No greater contrast can be imagined than is afforded by the akinesis of the latter, especially in the variety known as paralysis agitans sine agitatione, and the universal fidgetiness of the subjects of chorea. The Parkinsonian scarcely if ever manifests spontaneity in change of position; he literally "sits still." I have for a long time now been impressed by the fact that the average Parkinsonian never sits with his legs crossed, whereas nothing is more frequent in the normal individual than a seated position with one knee over the other. Glancing round the benches at my clinic at King's College Hospital one afternoon, I found 19 out of 20 students sitting in this way. Similarly, the Parkinsonian never sits with his arms folded, though here again is a commonplace change of attitude adopted frequently enough by the normal person. In a score of ways the absence of initiative, of spontaneity, of normal muscular play impresses itself on the observer. Among men a particularly common movement occurs in the course of ordinary conversation—viz., a movement of the hand and fingers to the chin, lips, and lower part of the face, but I have never yet seen a patient with paralysis agitans who has thus raised his hand. Women have a favourite "spontaneous" movement in similar circumstances—viz., toying with their wedding or other ring, but Parkinsonians do not do so. No changing expressions of emotion flit over the face—again providing a striking contrast with what obtains in chorea. This last remark raises an interesting point. Doubtless "spontaneous" movements contain "volitional" and "automatic" elements in inverse proportions—i.e., they are largely "automatic" and but faintly "voluntary"; on the other hand, change of position frequently results from the action of peripheral stimuli that certainly reach the sensorium, hence a conscious, "volitional," factor is not to be entirely excluded. But emotional expression is essentially "involuntary," so that in the patient with Parkinson's disease we note the absence, or poverty, *both* of "voluntary" motor action *and* of "involuntary" motor action, at least as far as the expression of the emotions is concerned. I attach importance to this conclusion, and since a "corresponding opposite" in encountered in cases of chorea the point will be referred to again.

Allusion was made above to variability in the course of Parkinsonian movement from time to time, and a similar variability characterises this "Bewegungsarmut." On occasion, especially in post-encephalitic cases, the patient appears to exhibit more freedom of movement than at others, and the ordinary "spontaneous" motions of everyday life are more in evidence. From patients of sufficient intelligence and introspection it is possible to gain some insight into the causation of their motionlessness, for I may say at once I consider the subjective factors of no less importance and significance than the objective.

CAUSES OF PARKINSONIAN AKINESIS.

(1) The general akinesis seems to me explicable largely by deprivation of, or serious reduction in, normal impulses to movement, both of the "voluntary" and the "spontaneous" kind. When asked, patients will admit the reduction of the need for or impulse to muscular action. Their "will to act" is impaired. They say in so many words that movement requires a greater effort of the will than previously. Everything is done "with an effort." And the curious thing is the rarity with which they seem to wish to make such efforts; on the contrary, they appear to contemplate this defect of motor function with a philosophical resignation. Those afflicted with the disease complain more of "losing the use" of their limbs, of loss of muscular power and of capacity for executing the ordinary fine movements of every day, than of mere "sitting still." We have seen that they can, as a fact, if they will, perform most of the movements of which superficially they appear incapable, but since this puts a tax on "effort" they simply do not make them.

Spontaneous change of position or posture being mainly a response to peripheral impressions, it may be designated a movement of reaction—a sort of "psycho-" reflex movement, for consciousness is probably faintly stirred. To these sense-impressions the Parkinsonian and the senile (for a similar decrease in motility is natural to the senescent) are alike indifferent, probably for more than one reason. In the case of the former, no evidence suggesting an afferent origin for the impairment is forthcoming; the peripheral nervous system on the sensory side all agree is normal. A questionnaire addressed to a number of intelligent Parkinsonian patients has elicited the answer that they rarely "feel the need" to change position, and this might conceivably be taken to argue for an actual reduction in afferent stimuli, owing to the relative fixity of the limb musculature. The muscles, however, are, many of them, in a condition of contraction; they are not "resting" or relaxed, immobile though the patient be; hence their sensory end-organs must be receiving stimulation. On the other hand, afferents from articular and periarticular tissues are probably to some extent restricted, but I cannot think this has a material bearing on the problem. That the immobility-effecting disturbance of function is not sensory receives support from another consideration.

Akathisia.

There are patients in whom immobility is actually a prominent symptom and yet who complain in a paradoxical way that "they cannot sit still," or only "with an effort." After a time they simply must get up and walk about, immobility having become

† Figs. 14, 15, 17, and 18 will appear in Lecture II.

intolerable; they say they feel "all strung up," or "tightened and screwed up," and so on. In other words, they feel, as does the normal individual, the cramping effect of an unchanging posture and have to move and stretch their limbs at intervals; the accumulation or summation of afferent excitations, derived from a largely motionless (though not resting) musculature, is such that the patient must rise and "work it off," only, however, to sink once more into the same state of motionlessness. Since, then, incoming impressions exist, the reduction of spontaneity in movement must have its origin on the effector side. Since I commenced to observe this phenomenon in the course of my studies more particularly of the last two years, I find that Bing has directed attention to it, and employed the term originally devised by Haskovec —"akathisia"—for cases of inability to "sit still" of hysterical or psychasthenic origin. Bing refers to various authors who have noted akathisia in paralysis agitans and post-encephalitic Parkinsonism, and while not committing himself to one explanation only, seems inclined to accept the view which some others have adopted and which is in accord with that here given. In my opinion akathisia is only an exaggeration of what is seen in normal individuals, and, since it has a psychogenic basis in some instances, it cannot be ascribed in any exclusive fashion to striatal disorder.

At this stage a word of caution must be entered as to indiscriminate use of the term loss of movement in connexion with Parkinson's disease. I have studiously avoided using the term "loss," apropos of reduction of voluntary and spontaneous movement, because I do not consider that the movements are in fact "lost" (with the few exceptions, and these only in part, already mentioned). *Because a patient does not make a movement it does not follow that he cannot.* It is of importance to bear this in mind when we discuss the functions of the corpus striatum at a later point.

(2) As for reduction of "voluntary" activity, the totality of sense-impressions at any given moment being in the Parkinsonian not much different from that of the normal person, we cannot ascribe the inaction to failure of extrinsic stimuli, although these doubtless play a part as one of the springs of action. Intrinsic stimuli, at whose bidding the "voluntary" motor system passes into activity, may perhaps have an ultimate sensory origin, but we cannot express this "impulse" in physiological terms; we know only that our patients say they are not as conscious of it as formerly. It is idle, therefore, to speculate whether such intrinsic stimuli are damped down centrally by a process of inhibition which rarely lifts, or are not forthcoming in adequate amount, or not endowed with sufficient potential. Perhaps this potential has an affective quality, and the "affect-quantum" essential for an impulse to generate action may be awanting. Apart from considerations of this kind the Parkinsonian knows from experience that voluntary movements are no longer effortless and facile, and desists *largely of his own accord.* Even in respect of this "sense of effort" not a little is obscure. Binswanger, for example, declares that in paralysis agitans "innervation-feeling" is lacking, yet what is signified thereby is not clear. We have already noted the absence of any sensory impairment in the disease, and cannot liken the motionlessness to that of the apæsthetic limb, all of whose dorsal spinal roots have been severed experimentally, as shown by Mott and Sherrington. Nor can "feelings" arising in the course of muscle innervation be lost; Parkinsonian muscles are not at rest. Besides, it is uncertain whether, and to what extent, kinæsthetic impressions can really exercise a stimulant effect, or their relative diminution result in immobility. Once more, no evidence is available to indicate that motor or efferent currents are themselves sensed. According to Titchener, "there is no such thing as a motor-cell sensation, a sensation corresponding to the innervation of a muscle or group of muscles," though Hughlings Jackson himself maintained that "the outgoing current, a motor cerebral current, is concerned with the physical processes during referrings of sensations to parts of the body"—in any case a view of little bearing on the present point. "Innervation-feeling," therefore, or rather its absence, offers no explanation of the phenomena. I suspect that by a "sense of effort" the patient signifies little else than the consciousness that his muscles no longer "answer," as the rudder "answers" the helmsman's lightest touch at the wheel; and *the conclusion, as indicated already more than once, is, that some at least of the akinesis of the Parkinsonian is the direct outcome of unwillingness to move, since the making of movement is no longer effortless.*

(3) The objective state of the peripheral motor apparatus is without doubt a factor, yet only one, in this general akinesia. No constant relationship between degree of peripheral rigidity and decrease of spontaneous or "voluntary" movement can be established, for the reason that the motor phenomena under discussion are frequently found where muscular rigidity is not a conspicuous feature. Relative immobility of facies and of limbs is often an early symptom in the disease, sometimes the earliest, before rigidity makes itself obvious. One of the earliest indications of the onset of the Parkinsonian "mask" is notable infrequency of ordinary blinking movements of the eyelids, but in other respects facial movements, "voluntary" and emotional, may still be normal, no trace of rigidity in any facial group being detectable. Reference has not as yet been made to the characteristic attitudes of limb segments in the disease, but it may be remarked here that they develop more or less *pari passu* with the immobility, —i.e., it is an immobility in attitude or posture. Now no constant interrelation obtains between rigidity and attitude in the first instance, for the hands and fingers may assume attitudes involuntarily at an early stage when the corresponding muscles are not demonstrably rigid.

As the disease advances, however, a general tendency to muscular fixity becomes ever more obvious, implicating all skeletal groups more or less indifferently. It is due mainly to a hypertonic state of the musculature, an overaction of the tone-effecting apparatus, to which due attention will be devoted subsequently. As a consequence, when the innervating current of "volition" reaches the motor periphery, it finds that: (1) The muscle elements it would innervate are already in relative contraction; (2) the antagonists to the required movement are also in activity. At this stage we shall not pursue the analysis further, for the matter can be more conveniently dealt with in the sections on disorder of muscle tonus. My observations, however, will show that in spite of the background of muscular overtone "voluntary" innervation can accomplish its ends both as regards prime movers, synergists, and antagonists in a given movement, so that *the conclusion is permissible that the condition of the peripheral motor system is no more than one of the causes of Parkinsonian akinesis, and not necessarily the most important.*

We must beware in Parkinsonian cases of attributing to disease of the corpus striatum symptoms not in fact pathognomonic. A limb may be immobile, or relatively immobile, (1) because the lower motor neurones are "paralysed," as in poliomyelitis; (2) because there exists a combination of innervation weakness and muscular spasticity, as in hemiplegia; (3) because presumably normal innervation encounters a "block" in distal motor mechanisms, as in paralysis agitans (in part); (4) because central "impulses" are awanting, as in the same disease. Under (4) should be included, for the sake of completeness, certain cases of psychosis (catatoniac stupor, anergic stupor, &c.), in which the immobility is psychogenic and partakes of a negativistic character. *In short, akinesia, or poverty of movement, obviously may arise at one or more of lower, middle, or highest physiological neural levels (in Hughlings Jackson's sense), a possibility which renders invalid its ascription to the corpus striatum alone.* Failure to envisage ætiological differences in respect of the development of this symptom, as with others that have already been made the subject of investiga-

tion, has been a fruitful source of confusion; with the exception of Binswanger, most recent continental writers have over-emphasised the "hypokinetic-rigid" syndrome of the corpus striatum at the expense of other clinical conditions of which immobility is a symptom, but which are in no way associated with striatal disease.

(4) Somewhat similar explanations must apply to the general slowness, retardation, and limitation of "voluntary" movement in the disease, as well as to the muscular weakness. Here again a wide conception is indispensable. Allusion was made above to the "motor helplessness" of the subjects of paralysis agitans and of progressive lenticular degeneration, and in my original monograph on the latter disease the facts were fully exemplified. I found that "volitional movements may be good in range, but they are usually resisted with comparative ease. This muscular weakness is not to be confused with clumsiness or awkwardness from hypertonicity or tremor. There is intrinsic muscular asthenia; the patient is incapable of any sustained effort; he cannot close his eyes tightly for any length of time, cannot keep his tongue protruded, cannot maintain his grasp." At that time I endeavoured to avoid the use of the term "paralysis," hoping it might be confined to diseases of the pyramidal system. Further consideration has led me to modify this hope, for *quâ* weakness, limitation, slowness, I see little material distinction between hemiplegic and Parkinsonian cases. The differences between pyramidal and extrapyramidal cases are distinct enough, but not as regards the above points. The *general* approximation of cases of double hemiplegia, especially of the pseudobulbar variety, to cases of paralysis agitans sine agitatione was emphasised long ago by Hughlings Jackson and again by Brissaud, and in these recent years we have seen examples of post-encephalitic Parkinsonism in which the diagnosis from pseudobulbar palsy has been more than a little difficult.

Having demonstrated the existence, in numerous instances, of such weakness, slowness, and imperfect range of "volitional" movement as constitutes, in Foerster's words, an "unmistakable paresis," I do not agree with him that there is no predilection type. On the contrary, a special class of acquired movements—viz., those of the smaller muscular groups throughout the body—is particularly liable to be affected, as has already been fully exemplified. The small muscles are those employed in what James Parkinson called "any nicer kind of manipulation"; their failure "to answer with exactness to the dictates of the will" is their characteristic in more than one state of motor defect. As a class, they suffer more than any other in hemiplegic cases; derangement or outfall of fine finger movements is seen in hemiplegia, and of laryngeal, glossal, facial, and ocular movements (it may be) in double hemiplegia. In extrapyramidal, as in pyramidal cases, analogous but not necessarily identical imperfection of small movements is to be observed. It is true, as we have seen, that in some instances seemingly as definite "paralysis" of various small muscle activities characterises Parkinson's disease, as it does pyramidal disease: but no one considers the pyramidal morbid state the replica of the other. The rigidities are not identical, nor are the "paralyses"; when, however, we find general resemblances in the types of movement that suffer, we are entitled to seek an explanation that is physiological rather than anatomical. In other words, *I do not take the "weakness" of certain movements in striatal affections to imply a concomitant anatomical defect of the corticospinal system, or of similar movements in hemiplegia to be the sequel merely of the corticospinal interruption; in each case the movements are disordered because their physiological quality or character is such that they suffer most and earliest.* To account for the "weakness" in paralysis agitans Foerster postulates a second corticomuscular path passing through the globus pallidus and in simultaneous action with the ordinary corticospinal tract in "voluntary" innervation. To me this hypothesis seems completely unnecessary (apart from its anatomical dubiousness); the rigidity in Parkinson's disease is *general*, but the "weakness" is *special*, and I submit the latter cannot be accounted for merely by anatomical interruption, just as in hemiplegia the special type of motor defect cannot be the outcome merely of a haphazard interference (by hæmorrhage or otherwise) of an anatomical system. In each instance there is defect or loss of *some* movements; in each the same *sorts* of movement are disturbed: behind both instances, therefore, must lie a similar disorder of function, but it is not a similar disorder of structure.

ORGANISATION AND WORK OF A LIGHT DEPARTMENT IN A HOSPITAL FOR SURGICAL TUBERCULOSIS.*

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THOUGH I have used lamps for light treatment for many years, and indeed had three German quartz mercury-vapour lamps in regular use for a considerable time before the war, it is only since the cessation of hostilities that I have been able to realise a long-cherished wish and have a properly planned and staffed light department. The great interest recently displayed in light treatment and the many requests I receive for assistance from practitioners and institutions desirous of installing apparatus for light treatment are my apology for this sketch of the organisation and work of the light department at Alton.

It may be of some help to those contemplating introducing light treatment into institutions which they serve or administer if I quite briefly outline the reasons which impelled me to establish a light department at Alton and the steps I took to plan and organise it.

Artificial Light Treatment.

First let me state that in this paper by light treatment I mean treatment by light produced by artificial means as opposed to sunlight. The term artificial sunlight I dislike as slovenly and misleading, and though the mercury-vapour lamps I have already alluded to were called artificial mountain suns, I have still to discover any lamp to which such a title can be legitimately or wisely given.

Though light treatment has been extensively scientifically investigated, especially during the last few years, it should be remembered that it owes its origin to shrewd clinical observation and its justification to clinical experience. Fascinating as are theories endeavouring to explain the biological action of light, they still remain incomplete, are sometimes contradictory, and are frequently confusing. Many and wide gaps in our knowledge still remain, and I recognise fully that the scientific principles of light therapy still rest on an incomplete and not too stable basis. I shall therefore confine myself here entirely to practical considerations.

Very considerable opportunities for the practice of sun treatment on an exceptionally extensive scale, both inland and at the seaside, had convinced me of its value in surgical tuberculosis. It was, therefore, natural that one should wish to employ light derived from artificial sources therapeutically.

The Light Department Introduced at Alton.

The cessation of hostilities, the sympathetic approval of the late chairman of the hospital, Sir William Treloar, and the generosity of a private

* A paper read before the Electro-Therapeutic Section of the Royal Society of Medicine.

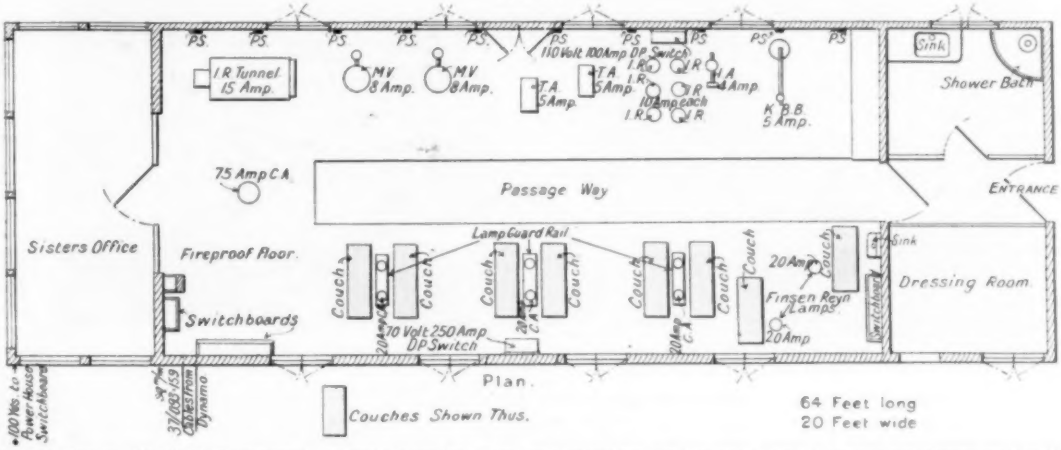
subscriber, gave me the long-desired opportunity of founding a light department.

It is apt to be forgotten by those contemplating artificial light treatment on any considerable scale that this form of treatment is necessarily very expensive. The initial purchase of the lamps is only the beginning and not the end of considerable expenditure. Much electric current must be consumed, the services of a skilled electrician are essential, the plant must be maintained and renewed, experimental work is almost essential, numerous accessories must be purchased, a staff of nurses must be trained, retained, and maintained. Indeed, the lamps are the least expensive item. Needless to say, this side of the matter was carefully and anxiously considered. I had to satisfy a generous but astute business man in the person of Sir William Treloar, on whom devolved the burden and the responsibility of financing the hospital, that in the interests of the patients under my care the expenditure contemplated, and which would be a constantly and probably increasing drain on the institution, was essential, unavoidable, and justifiable. I would emphasise this aspect, for I am convinced that at this stage an elaborate light department is neither essential nor justifiable for many institutions.

The success which had attended sun treatment gave promise of success from artificial light and made its employment justifiable, the impossibility of obtaining certain results except by artificial light made it essential, and the natural course of evolution in a progressive institution made the establishment of such a department unavoidable. I had absolutely convinced myself of the need before I attempted to influence Sir William Treloar. No hospital for surgical tuberculosis in the country had a properly equipped and staffed light department. For lupus cases especially such equipment was an urgent need. Its value has been thoroughly demonstrated by Dr. Sequeira at the London Hospital, whose brilliant results in the treatment of lupus are so well known. There was no shadow of doubt that numerous cases demanded the treatment a light department alone could give. By the system of heating already employed all the electricity required for the light department could be generated free of cost other than fair wear and tear of the machinery. There already existed an admirable generating plant and a highly skilled and competent resident engineer who could install and maintain the new plant required without additional cost to the institution, and conduct the necessary experimental electrical work requiring investigation.

The next point to determine was whether a new building for the light department should be erected. Here I felt that it was a safe assumption to make that further possibilities exist and much further investigation is needed. Finality has not yet been reached, and therefore the present light department has been created in an adapted ward which could readily be spared. The present light department must therefore be regarded as probably needing modification and possibly considerable extension at an early date, but, when the time comes for further extension, no building will have to be scrapped, and the ward will revert to its original purpose. Such apparatus as remains of proved utility will simply be transferred to a specially designed building. Meanwhile we are acquiring at a minimum cost experience which will be available later. (Figs. 1 and 2.)

FIG. 1.



Ground plan of the Light Department. Couches are indicated on the carbon arc (70-volt) side: they are not shown on the 110-volt side. The iron arc, Kromayer, and Finsen-Reyn lamps are water-cooled; the water, circulating through these lamps, discharges into the sink. P.S. = 10-ampère plug and switch. I.R. = Infra-red ray lamps. I.R. tunnel = Radiant heat (luminous rays) tunnel. M.V. = Mercury-vapour lamps (air-cooled). T.A. = Tungsten arc lamps. D.P. = Double-pole switches. K.B.B. = Kromayer type of water-cooled mercury-vapour lamp. C.A. = Carbon arc lamps. I.A. = Iron arc lamps.

A ward was therefore selected as near as possible to the power-house to reduce the cost of cable. The ward is a simple wooden structure. The necessary cabling, wiring, and installation of the lamps was done by direct labour. To reduce the risk of fire the walls to a height of 4 feet and the floors were covered with sheets of asbestos, which has the advantage of being cheap, non-inflammable, a non-conductor of heat, and, in addition, has a dull non-reflecting surface, so that the patients and staff are not subjected to eye-strain by reflected light. In the power-house a motor generator was erected to break down our existing voltage of 110 to 70. In the trench dug two cables were laid, one to convey the current at 70 volts, the other current at 110 volts for lamps other than the Danish. Each has a main double-pole switch, where it enters the light department, so that the whole current can be instantly switched off in the light department as well as in the power-house should occasion require it. Necessary switchboards with ammeters and voltmeters, fuses, and abundant plugs for the 110-volt circuit are, of course, fitted. All the fittings, metal couches for recumbent cases, and even the mattresses on which the patients lie were made in the institution.

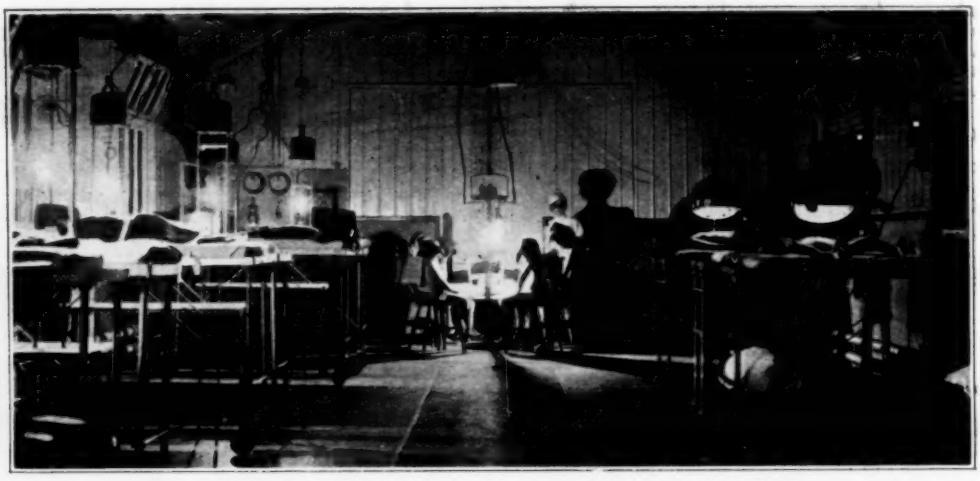
These essential preliminaries having been settled the nature of the installation to be provided and the means to be adopted for training the staff had to be considered.

The Finsen Institute, Copenhagen.

Naturally, the first place to turn to was the Finsen Institute, Copenhagen, and it appeared to me essential to make myself as fully conversant as possible

with the methods of phototherapy employed in this pioneer and famous institution. By the kindness of Dr. Axel Reyn, the director, I was permitted to visit the Finsen Institute and study its methods under his guidance. I would here like to express my gratitude for and appreciation of his generous kindness. He took infinite pains in instructing me in the admirable technique he employs. No detail was too trivial, no difficulty too great. I have the most profound admiration for the technique followed at the Finsen Institute, and the success which has been achieved there is a tribute to its thoroughness. The technical skill which has been employed in designing the lamps used, the exact care with which they are used, the ingenuity displayed in the application of the light in difficult cases, the meticulous cleanliness devoted to the lenses and applicators, the perfect drill, the splendid team-work, and the high degree of perfection of the carbons used as electrodes—these and other details aroused my sincerest admiration. I found that Dr. Reyn and his co-workers pinned their faith to the carbon arc for both the general light baths and for local treatment. General light baths with the carbon arc had been used at the Finsen Institute systematically and with success since 1913. The majority of the cases treated were lupus vulgaris. Dr. Reyn has shown that by combining general light baths with local treatment speedier, better, and more certain results were obtained. The use of general light baths was extended to other forms of tuberculosis, but lupus remains the most common form treated.

FIG. 2.



One end of the Light Department. Patients having general light baths.

FIG. 3.

The 75-ampère carbon arc lamp.

A second visit confirmed the favourable impressions derived from the first, and I determined that a large part of my light department should be based on the teachings of the Finsen Institute. I followed these to the best of my ability, modifying them where necessary for my particular needs, and copying them carefully where exact imitation was desirable. But another point was firmly impressed on me as the result of my visits. To obtain similar results it would be necessary to have identical apparatus and to employ identical technique. I must have not only carbon arc lamps, but carbon arc lamps as used at the Finsen Institute with Finsen carbons as electrodes, Finsen ideals of thoroughness, and genuine Finsen technique. To secure the last Dr. Reyn kindly arranged that one of the most competent of his trained sisters, a highly educated lady who spoke English fluently, should come to Alton to instruct the nurses in our light department, and, in addition, I arranged for one of our sisters to work at the Finsen Institute in Copenhagen. In each case the visit was of six months' duration and particularly competent sisters were selected. The result of this has been thoroughly satisfactory.

The installation obtained from the Finsen Institute was as follows. Two 75 ampère carbon arc lamps, each capable of treating eight ambulant patients simultaneously; six (i.e., three pairs) of 20 ampère carbon arc lamps for recumbent patients, and three water-cooled Finsen-Reyn 20 ampère carbon arc lamps for local treatment. With such an installation and by following rigidly the adopted technique, I felt confident that successful results could be anticipated, and that confidence has been justified. At the same time I felt that I must not limit my phototherapy to one particular method. Accordingly, I

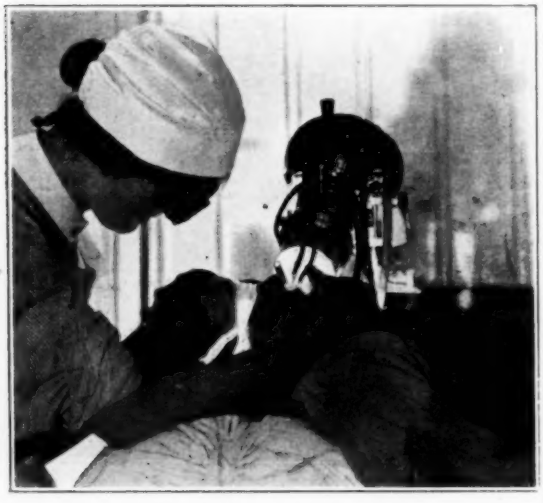
decided to make provision for testing and employing where desirable any other form of light which seemed of promise.

During the last few years much attention has been paid to ultra-violet radiation, and especially to short-waved ultra-violet rays. Their value in rickets has especially been abundantly demonstrated, their tonic action has attracted much attention. The discovery that the bactericidal power of the blood might be raised after exposure of patients gave alluring prospects. Indeed, the tendency has recently been to use short-waved ultra-violet rays more and more, excluding or reducing the use of the longer-waved rays.

Many so-called artificial sun lamps are rich in short-waved rays never found in the solar spectrum. Makers will often point with pride to lamps which will produce a full erythema dose in three minutes. Such lamps are indeed attractive. They are comparatively cheap, consume little current, have most striking and rapid action, are therapeutically very active, exceedingly short exposures are alone needed and can be tolerated, and they are very easily installed. Accordingly, on my 110-volt circuit I made provision for these, and regularly continue to use mercury vapour, tungsten arc, iron arc, and other lamps. In addition, I have tried several other lamps and numerous electrodes. Many of these have their uses, some are very valuable, especially in certain local conditions, but, on the whole, in surgical tuberculosis, at any rate, they have not come up to expectations. For solid clinical results, as far as I have observed them, I find myself more and more reserving them for the treatment of certain local conditions or even for certain stages in the evolution of local conditions. I admit their value, but had I to choose between them and the various types of Finsen lamps I should at the moment unhesitatingly select the latter.

While many important investigations on the mode of action of light have been completed in the laboratory the subject is so complex, so many factors

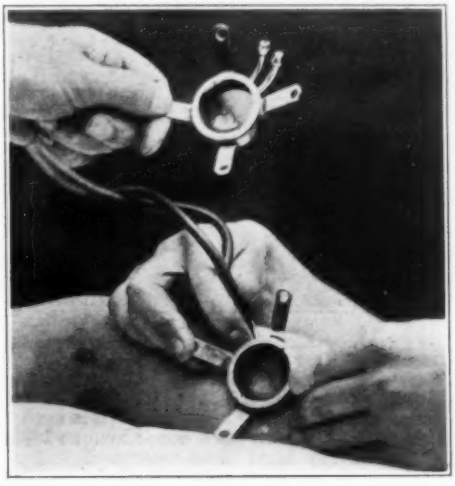
FIG. 4.



Finsen-Reyn lamp.

are involved, that I believe clinical experience is still our most reliable guide. When we consider the matter further, this attitude appears to me to be logical. The short-waved rays have very little penetrative power, but have a powerful superficial necrotic action, so that long exposure cannot be tolerated. The total radiant energy introduced into the patient is therefore comparatively small. Caution should be exercised in their use, and the existing tendency to employ them indiscriminately is not devoid of danger. I do not wish to speak dogmatically, for I fully appreciate the value of these rays in many conditions—in some, indeed, their action is remarkable, as, for example, in relieving acute neuritis of

FIG. 5.



Applicators for treatment over muscular areas—e.g., limbs.

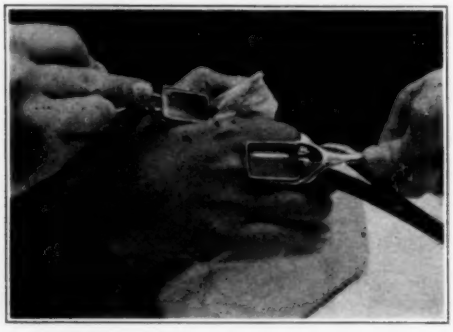
undiscovered origin. How these short-waved rays have acted I cannot tell, but the fact that they have given almost instantaneous relief remains. Nevertheless, until we know more about their mode of action my whole instinct is to be cautious in their employment.

This leads to a very important matter in connexion with light treatment. On the physical side it is possible to produce almost infinite varieties of radiant energy, and to use these rays in a variety of combinations. But while many observations have been made of their biological effects there is so much more to learn that just as you need a bacteriologist or pathologist for ordinary hospital routine so, it appears to me, you need a skilled laboratory worker in connexion with your light department. By the combined generosity of Sir Horace Plunkett and the Medical Research Council I have been able to secure such help in connexion with my light department, and we are fortunate in having obtained the whole-time services of Dr. Bannerman, at Alton, for this purpose in the first light laboratory established in connexion with a hospital in this country. He is checking, investigating, and assisting us by every means in his power, and his work is proving of the utmost value. The result of his observations will be the subject of communications from time to time.

With regard to the actual work of the light department, I have planned arrangements somewhat differently from the Finsen Institute. Experience in the administration of a large children's hospital has taught me the importance of constant and complete responsible supervision. As you will see from the plan, the whole of the light department is visible and readily accessible. There are no cubicles, recesses, or separate treatment rooms, so that the sister in charge has everything always under her eye. In my opinion certainly children and generally adults should never receive light treatment unless under constant trained observation. Children may endanger themselves by playing, they may be faint or sick, they may interfere with and infect exposed wounds, some mishap may happen to the lights, or some unforeseen event may occur. If the ideal of trained supervision is realised, then separate rooms for separate lamps or special

treatment are impracticable unless expense is no object. With children the necessary supervision is comparatively easy. The older boys or girls attend at different sessions. With adults separate sessions for each sex would also be observed or the light department duplicated. At Alton patients are treated behind screens only when their condition is such that privacy is essential, as in such conditions as lupus of the vulva receiving local light treatment.

FIG. 6.

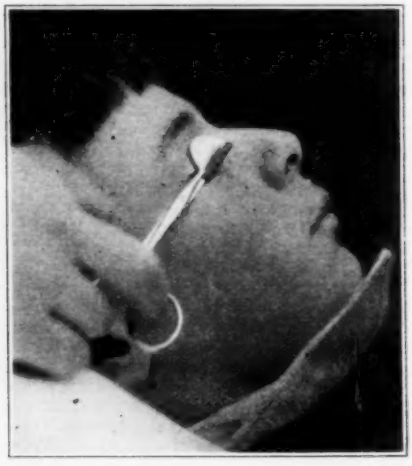


Oblong concave and convex applicators for digits or interdigital spaces.

Two sisters-in-charge are therefore employed. At the busiest period of the day both are on duty. The nurses come on duty at 7.30 A.M. Actual treatment commences at 8 A.M. Local light treatments proceed continuously from that time with the Finsen-Reyn, tungsten, iron and other arcs, and the mercury-vapour lamps, until 7 P.M., with intervals for dinner and tea.

At the conclusion of treatment the department is thoroughly cleaned out, all lamps examined, the Finsen-Reyn lamps completely dismantled, each lens individually cleaned, every compressor similarly treated, and everything made ready for the following day. General light treatments with the carbon arcs are held daily from 9 till 11.30 A.M., and from 1.30 till 4 P.M. At each of these sessions six recumbent and eight ambulant patients are treated, so that 28 patients have general carbon arc light baths daily. I agree entirely with the experience of the Finsen Institute that two and a half hours on alternate days is ample for general light baths for individual patients. Fifty-six patients, therefore, are having such light baths every other day. That is usually sufficient for present requirements. If more general light baths with the carbon arc are needed, an additional session must be held or general light baths with other lamps be given. One 75-ampère arc is always held in reserve and may be used to give supplemental light treatments if needed. (Fig. 3.)

FIG. 7.



For treatment on the under surface of an eyelid. The eyelash is clipped by specially designed forceps.

Each patient having a general light bath is provided with a special simple brown paper shade for his eyes; this is cheaper, safer, and much more sanitary than goggles. Each member of the staff has his or her own goggles; convenient specially designed lorgnettes are used for occasional visitors. Each patient is also provided with a clean bathing slip, a clean face towel and bath towel for each treatment, and, in addition, ambulant patients have their own wooden sabots, which are scrubbed after use. During treatment patients are given water to drink. As a general rule, exposure of half an hour per session is given to new patients, increasing from one-quarter to half an hour per session to a maximum of two and a half hours. Ambulant patients face the light, sitting the first half of the session; during that time they frequently amuse themselves by singing or conversation. When their backs are exposed they are permitted to read. They sit as near to the lamps as the heat will permit, the nearer the better, as it will be remembered that the intensity of the light varies inversely as the square of the distance from its source. The current used is a direct current, the positive electrode is above; on the under side of that electrode an incandescent crater is formed, the light is thus thrown down on to the patients with minimum wasted diffusion. During treatment free perspiration occurs, and at the conclusion of treatment each ambulant patient proceeds to the douche room, where he is sprayed with tepid water, dried, and dresses in the dressing-room. Recumbent patients are washed on their stands after treatment, dried, and returned to their wards suitably clad. The sheets over their mattresses are removed and replaced by clean ones before each session. There is thus a considerable amount of laundry work inseparable from light department routine. Recumbent patients are irradiated on conveniently movable stands which we specially constructed at Alton. Adjacent stands are exchanged at half-time during each treatment, and patients are turned so that

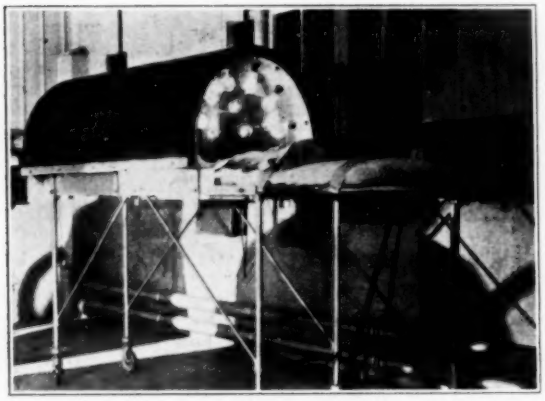
FIG. 8.

Applicator in position over everted eyelid.

each part of the body is equally irradiated, the patient's head being protected from the heat by adjustable asbestos shields. For recumbent treatment three 20-ampère lamps are needed for each two adults, two for each two children.

The Finsen-Reyn lamps (Fig. 4) are only used for the local treatment of lupus. Success with these lamps

FIG. 9.



The tunnel: Radiant heat lamps (tungsten and carbon filament). The patient, on a sliding couch, is passed into the tunnel and cooled during treatment by an electric fan.

depends largely on the skill of the operator and the exercise of scrupulous cleanliness. Great attention is therefore paid to training selected nurses in their use. Nurses are not allowed to use these lamps until they have served three months in the light department and shape well. They are then given progressively difficult lesions to treat. Specially designed compressors are used for different regions of the body, as will be seen from Figs. 5 and 6. These compressors, of varying shapes and sizes appropriate to the part being treated, are each constructed of two pieces of clear quartz mounted in metal. In the space between each piece of quartz, cold water is in continuous circulation while treatment is in progress, during which time the compressor is kept firmly in apposition with the part being treated. The light from the Finsen-Reyn lamp is derived from an automatically-fed scissor-shaped arc, and is focused through a cylinder containing five quartz lenses. This tube, which is filled with pure distilled water, filters off most of the heat rays, and this filtration of heat is continued when the focused light is transmitted through the water-cooled compressor to the lesion. The distilled water in the cylinder is cooled by tap-water kept continuously circulating around it. These lamps are kept continuously in use, with the exception of Saturday and Sunday afternoons, Bank holidays, and during part of the month of August, when the light department is closed down. Fresh distilled water specially prepared and free from particulate matter is put in each cylinder daily. In addition to renewals, as occasion arises every lamp is completely overhauled at regular intervals. Treatment with the Finsen lamp usually occupies two hours for each area treated, but that varies to some extent according to the part involved. Thus, treatment of the under surface of the cocainised eyelid rarely is practicable or desirable for more than 20 minutes. (Figs. 7, 8.)

By the use of quartz compressors which exsanguinate the part treated much deeper penetration of the light is possible. The light appears to have a selective action on the infiltrated tuberculous tissue. An intense reaction occurs in the area treated, which lasts for several days, exceptionally weeks, and further local treatment on that spot is not repeated until the reaction subsides. It is of very great value indeed in the majority of cases to intermit the light baths after a period of treatment, this period varying with different patients. If the light baths both general and local are abandoned, say, for about a month and then resumed they are much more effective. Not only is this done, but the patients are then given the advantage of complete climatic change, scene and régime, as I have found that it is of surprising benefit to send the majority for this rest period to Hayling Island. Here during the summer months they may have particularly valuable natural sun treatment, immensely enhanced in suitable cases by graduated sea-bathing. I must not dwell on this point, but I cannot sufficiently emphasise its value. The effect on both the general health and the local lesion is marked.

Lamps other than Carbon Arcs.

In the treatment of surgical tuberculosis by artificial light I would, at present, regard the Finsen side of the light department as of the greater importance, the other as accessory. The value of the other forms of lamps depends to a considerable extent on the skill with which they are used as substitutes for or combined with the various carbon arcs. To these I must briefly allude.

First, I would refer to what we call the "tunnel," which emits no ultra-violet light. (Fig. 9.) It consists merely of numerous filament lamps, carbon or tungsten, gas-filled or vacuum. It is simply radiant luminous heat. The patient, strapped on a stand, is pushed into the tunnel, and there exposed to the light of as many or as few lamps as desired. The heating effect is considerable, but the patient's skin is cooled by an electric fan which can be made to draw the air over him at varying speed. Meanwhile the long-waved light rays, having considerable penetrating effect, warm and activate the blood. The tunnel often provides a useful treatment immediately precedent to that from a short-waved lamp, such as the mercury vapour. Its

FIG. 10.

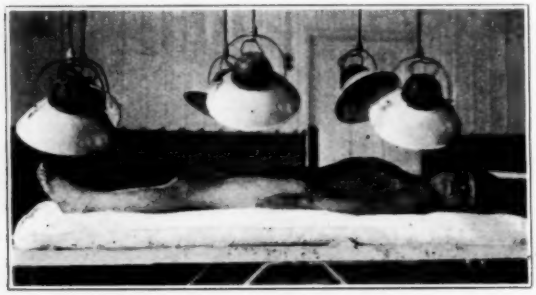
Treatment by mercury-vapour lamp. Lamp in foreground has carbon filament lamps around to warm patient and activate the effect of the ultra-violet rays.

greatest sphere of usefulness, however, is not in the treatment of surgical tuberculosis, but in certain other conditions.

The air-cooled mercury vapour (Fig. 10) and tungsten arc lamps are so well known and so commonly used that the briefest reference will suffice. For general treatment in surgical tuberculosis they are not so valuable in my hands as the carbon arc. Rapid in their effects at first, their value appears to diminish after a few treatments. They may usefully prepare the way for, or sometimes be suitably used alternatively with, the carbon arc. In surgical tuberculosis they are more valuable for local lesions, sinuses, ulcerated lupus, suppurating or discharging glands, scrofuloderma, and the like. The water-cooled iron arc has a distinct value. It may be used with benefit in local superficial lesions. Its chief merit lies in its cheapness.

Long-waved infra-red rays are of doubtful value. (Fig. 11.) I believe they may be usefully employed for local lesions—e.g., tuberculous hips and knees in patients with low hæmobactericidal power where that is raised considerably temporarily by the use of general ultra-violet light baths. In such cases, while the bactericidal power of the blood is high, they will congest the part and I think in this way hasten the cure. For preliminary local treatment of lupus in regions other than the face, I use on the 110-volt circuit a water-cooled m.-v. lamp of the Kr.

FIG. 11.



Electric radiators for infra-red rays.

type, the value of which has been extended by the introduction of rod-like quartz applicators. The use of these applicators facilitates the treatment of mucous surfaces.

I cannot now discuss the indications or contra-indications for artificial light in surgical tuberculosis, or the results achieved, and must omit many other matters associated with a light department.

One class of patient, however, should be mentioned—the patient who, though needing light treatment, is too ill to be brought to the light department or who would lose more by the movement than gain. For that patient the light department must come to him. By the kind coöperation of a well-known firm I am now engaged in perfecting a lamp specially designed for the needs of such a patient. Such a lamp must have certain essentials. It must be readily portable and simple in application, the ampèrage must be small as it will have to be plugged into an ordinary wall-plug, the light therefore must be concentrated on and yet extend the length of the patient. It must be so designed that the light generated can be used effectively and to the greatest advantage. Although certain mechanical difficulties remain yet to be overcome, I hope they will be very speedily surmounted.

It would be invidious to compare the relative merits of different makers' lamps. There are many admirable lamps on the English market to-day which may be safely recommended for special purposes with confidence. The long-flamed arc which has been advocated by and named after my friend Dr. Eidenow, is one in point. It is an excellent lamp, rich in ultra-violet light, and is rightly popular. An excellent arc lamp provided with four pairs of impregnated carbons is now on the market. It is an admirable lamp, economical in first cost and upkeep, and simple to use. It is rich in ultra-violet light, but should be used with discrimination. Indeed, I confess I have misgivings as to the use of powerful sources of ultra-violet light in the hands of the inexperienced.

Work Done in the Light Department.

During the 12 months from March 31st, 1924, to April 1st, 1925, but excluding the month of August, 1924, during which month the department was closed, the following treatments were given to patients suffering from various forms of non-pulmonary tuberculosis. Patients treated for other conditions are not here recorded.

General Carbon Arc Light Baths.

Boys	88	.....	3787 treatments.
Girls	71	.....	2420 ,,
Patients	159	.....	6207 ,,

Finsen-Reyn Lamp Treatments.

(For the local treatment of lupus vulgaris.)

Boys	20	.....	589 treatments.
Girls	26	.....	768 ,,
Patients	46	.....	1357 ,,

Other Light Treatments, including Mercury Vapour (Air-cooled) and Tungsten Arcs.

Boys	34	.....	1166 treatments.
Girls	37	.....	956 ,,
Patients	71	.....	2122 ,,

Total Light Treatments.

Boys	142	.....	5542 treatments.
Girls	134	.....	4144 ,,
Patients	276	.....	9686 ,,

Conclusion.

As I have confined myself to the title of this communication, I fully realise how incomplete my remarks must appear. It would be desirable to compare the relative merits of sunlight and light produced by artificial means, the indications for their combined or separate use, the advantage of simultaneously or subsequently employing other physiotherapeutic aids, notably aerotherapy, balneotherapy, diathermy, and the like, but that is beyond the scope of this paper. Nevertheless, such matters must be considered carefully in prescribing light treatment; especially should the indications for artificial light and sunlight be borne in mind. I have not the very slightest hesitation in stating emphatically that certain cases derive greater benefit from the one than the other, and others are only given the maximum help by the application of both, often supplemented by other physical aids to cure. Neither have I discussed artificial light therapy in other conditions than tubercle. But this I do say, the light department has been a valuable means of assisting me in the treatment of surgical tuberculosis, and without it much that is now being accomplished at Alton could not be done at all, while much more is very definitely aided.

WAGNER-JAUREGG TREATMENT OF DEMENTIA PARALYTICA.

BY S. GROSSMAN, M.R.C.S. ENG.

(*From the Therapeutic Department, Cardiff City Mental Hospital.*)

MUCH attention has been recently given to the Wagner-Jauregg treatment of dementia paralytica by the infection of the case with malaria. Very favourable reports have been published in this country and abroad, and we decided to give it a trial at this hospital. Although only eight patients were inoculated, the difficulties encountered and the results obtained are worth recording.

One of the difficulties was to obtain permission from responsible relatives to inoculate the patients with malaria. Unfortunately, the general public does not yet appreciate the meaning of "general paralysis of the insane," and although we have about 30 general paralytics at the hospital, permission was only obtained to inoculate eight of them.

Another great difficulty was to obtain quinine-free benign tertian malarial blood. No such blood was available for a time in Cardiff, and the organism does not often survive when the blood is sent from one

part to another. The opinion of Dr. C. M. Wenyon is that there is no possibility of the parasite surviving unless the blood is inoculated directly into Bass's culture medium, and the tube enclosed in a thermos flask, and so kept warm on the journey. The parasite must also have a certain amount of dextrose, otherwise it dies immediately.

Through the kindness of Dr. John Hartigan, of the Royal Hamadryad Seamen's Hospital, Cardiff, we were enabled to obtain blood from a quinine-free patient suffering from benign tertian malaria. As recommended by Dattner and Kauders, the blood was collected in 0·5 per cent. sodium citrate in physiological salt solution, the dilution being 2 parts of blood to 1 part of the solution. The blood thus obtained was examined by Dr. W. Parry Morgan, city and county bacteriologist, and the parasites in it found to belong to the species *Hæmamœba vivax* (*Plasmodium vivax*).

One patient was immediately inoculated with the diluted malarial blood, the others being inoculated with blood obtained by venous puncture from a paralytic patient suffering from benign malaria.

Technique.

The technique is quite simple. Two c.cm. of blood were injected under the skin between the scapulæ, and a simple sterile dressing applied. The patient was allowed up, but the temperature was carefully recorded twice daily. The earliest case had an incubation period of eight days; the latest, and perchance the first case inoculated, had an incubation period of 21 days. A microscopic examination of the blood was made whenever a patient developed malaria to corroborate the diagnosis. When the first attack of malaria developed the patient was put to bed at once and isolated. The greatest care was taken to keep the ward free from mosquitoes. The quinine tolerance of the patients was previously ascertained, and in one case the patient refused to take quinine on account of its bitter taste. Euquinine (quinine ethylcarbonate) in 5-grain doses twice daily was substituted for quinine sulphate on account of its freedom from taste. The powder was given in milk.

In the other cases, where the malaria ran an uninterrupted course, we followed the advice of Prof. Pilcz, and after ten attacks checked it; during the first three days by 0·5 g. of quinine twice daily, and then once daily for two weeks. At the same time, a course of neosalvarsan was given intravenously once a week, commencing with 0·3 g. and working up to 0·6 g. One case developed marked jaundice, and another hyperpyrexia with exhaustion. The splenic enlargement was easily reduced by the quinine treatment. There were no deaths amongst the inoculated patients. During the attacks hallucinations and persecutory ideas were manifest in some cases.

Case Records.

The following is a brief description of each case:—

CASE 1.—Duration of disease about 12 months.

Before inoculation patient was exalted and deluded; had very frequent hysterical attacks, during which he became very restless and noisy; it took several nurses to keep him in bed; speech slurred; memory impaired; fibrillar tremor of the tongue; pupils equal, reacted very sluggishly to light. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 21 days; number of rigors, 10.

Present Condition.—Patient tolerated treatment well, but refused to take quinine. Euquinine had to be given. Physical improvement marked; mental improvement slight. No hysterical attacks since treatment.

CASE 2.—Duration of disease about 12 months.

Before treatment patient very depressed, deluded, and took no interest in his surroundings; occasionally refused food; speech slightly slurred; memory fair; fibrillar tremor of tongue; pupils unequal and fixed. W.R. negative in serum; strongly positive in cerebro-spinal fluid.

Incubation period, 8 days; number of rigors, 10.

During treatment patient was very deluded and hallucinated; after the eighth rigor he became markedly jaundiced, and this lasted until the commencement of quinine treatment.

After treatment patient gradually improved in health and mind; was able to be employed on the gardens until his discharge from the hospital; at the time of discharge he was in good health and quite rational.

CASE 3.—Duration of disease, two years (malaria before admission; Panama before the war, Mesopotamia 1917).

Patient was admitted in June, 1922. He was very confused, entirely disorientated, deluded. Pupils reacted to light; speech not slurred; W.R. negative in blood, positive in cerebro-spinal fluid; cells, 17 per c.mm. Patient's mental condition gradually improved, and he was discharged on Nov. 26th, 1922.

Readmitted on May 29th, 1923: Very boisterous and grandiose, restless and exalted; memory poor; fibrillar tremor of tongue; speech slurred; pupils reacted to light. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation Period.—Patient did not react to two inoculations at 20 days' interval.

Present State.—Patient is in fairly good health, and in a slight remission.

CASE 4.—Duration of disease, four years.

Before inoculation patient was very exalted and deluded on admission; had ideas of grandeur; memory impaired; pupils reacted sluggishly to light; gait unsteady; speech slurred. W.R. positive in blood and cerebro-spinal fluid.

At the time of inoculation patient was in fairly good physical health, and in a mild remission.

Incubation period, 10 days; number of rigors, 10.

Present State.—Patient tolerated treatment well; was very deluded during treatment; remains deluded and demented; general health improved.

CASE 5.—Duration of disease, five years.

Before Inoculation.—Patient demented and deluded; speech slurred; memory poor; pupils fixed; fibrillar tremor of tongue; health fair. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 12 days; number of rigors, 1.

Remarks.—Patient became extremely ill during first attack of malaria; temp., 107° F.; very restless, with signs of exhaustion; tepid sponging failed to reduce temperature; an intramuscular injection of 1 gr. of quinine acid hydrobromide was given, and repeated in three hours; temp. gradually became normal, but physical condition of patient did not allow continuance of malaria treatment.

Present State.—Patient's mental condition became worse for a time, but gradually improved; at present patient is demented; his physical condition is fair.

CASE 6.—Duration of disease, two years.

Before Inoculation.—Patient wildly excited and exalted; incoherent; speech slurred; pupils react sluggishly to light; tongue tremulous; gait unsteady; health indifferent. W.R. strongly positive in cerebro-spinal fluid.

Incubation period, 12 days; number of rigors, 10 (not very marked).

Present State.—Patient tolerated treatment well; physical condition improved; gait much more steady; no change in mental condition.

CASE 7.—Duration of disease, 15 months.

Before Inoculation.—Patient deluded and hallucinated; speech tremulous and slurred; memory poor; gait very unsteady; hypertonicity of the whole nervous system; blindness of left eye; right eye fixed; feeble physically. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 13 days; number of rigors, 10.

During treatment patient was very deluded and hallucinated; ideas of persecution marked.

Present Condition.—Patient tolerated treatment well; gradually improved physically and mentally; at present usefully employed; mental condition good; still under observation at the hospital.

CASE 8.—Duration of disease, 15 months.

Before Inoculation.—Patient was in mild remission five months; speech not slurred; gait steady; health fair; employed in the ward; pupils reacted to light and accommodation. W.R. strongly positive in blood and cerebro-spinal fluid. Since May, 1923, when patient had a series of seizures, he became very confused; speech was slurred; gait unsteady; restless by day and night; frequent seizures; health fair.

Incubation period, 8 days.

Present Condition.—Patient had no rigors; blood did not show malaria parasites; for 12 days temp. raised to 101° F.; tolerated quinine; temp. became normal, but patient became very anæmic; mental condition became worse; bedridden.

General Results (One and a Half Years after Treatment).

Of the eight cases inoculated: (*a*) Two are in a state of complete remission; one has been discharged from the hospital; the other, who is still under observation, has regained his full power to work, and is quite rational. (*b*) In two cases the improvement in the physical condition of patients is marked, and in one there is a slight mental improvement. (*c*) Two cases have not reacted well to the malarial treatment, and their mental and physical conditions remain stationary. (*d*) In one case it was found necessary to terminate the treatment during the first rigor, as the patient was becoming exhausted. (*e*) In one case repeated inoculations with malaria were unsuccessful.

Conclusions.

1. The treatment of general paralysis with benign tertian malaria is justified; the technique is simple; the fever can be easily and quickly controlled by quinine. No malaria relapses have occurred.

2. The more recent the case, the better the prognosis; but even late cases improved physically.

3. The remissions are more marked than in untreated cases.

4. An attack of malaria appears to produce immunity to artificial inoculation.

5. Arsenical medication used in any chemical combination only has failed in the treatment of general paralysis of the insane.

6. The Wassermann reaction in the blood and cerebro-spinal fluid, the Ross Jones and Weichbrodt reactions in the latter, remained unchanged. Neither are the cell-contents of the cerebro-spinal fluid influenced by the production of malaria.

7. Even in cases of complete remission some physical signs of general paralysis of the insane remain—e.g., Argyll Robertson pupil; greasy complexion; exaggerated reflexes.

I beg to thank Dr. E. Goodall, medical superintendent, for permission to publish this article.

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MILK-BORNE EPIDEMICS.

BY F. W. C. BROWN, M.D., D.P.H. ABERD.,
MEDICAL OFFICER OF HEALTH, BOROUGH OF HEYWOOD.

MILK-BORNE epidemics of infectious disease, although, fortunately, not very frequent, are events which the existing laws of public health have not been adequate to abolish from our records. The possibility of any of the commoner infectious diseases being spread in a locality through such an essential food as milk, which in great part is taken into the alimentary system in the uncooked state, will always be a source of danger under existing powers. There can be little doubt that milk is the one medium from which we must expect most danger as an infection-carrying agency, being as it is of all food substances the best fitted for the multiplication of pathogenic and non-pathogenic organisms.

The main questions which arise when any milk-producing source is suspected of being responsible for widespread sudden outbursts of infectious diseases are: first, how to determine by absolute proof that the milk is the source of infection, and, secondly, how the public health official is to act in order to put an end to that source. The question of absolute proof largely depends upon the bacteriologist in the case of those diseases for which a specific organism has been found associated—e.g., typhoid fever. Unfortunately, however, in the case of scarlet fever and some others, we cannot look for any assistance from a bacteriological report. We must gather what evidence is available from such factors as the suddenness or otherwise of the epidemic, and other active causes which are common knowledge and usually quoted by text-books on the subject.

Regarding the greater of the two questions, how is the official to act? The difficulties can be fully appreciated only by investigating an actual case, such as a newly-appointed official experiences when scarlet fever is the disease to be dealt with in a district where the Infectious Disease Prevention Act of 1890 has not been adopted by the local authority concerned. Let us assume, however, that action under this adoptive Act can be taken in the majority of cases. The question of prompt action must be fully appreciated in order to deal not only with an epidemic which is proved to be milk-borne, but with one which is only suspected of being so.

The medical officer probably has his suspicions aroused by the receipt of numerous notifications of a particular disease from the medical practitioners in his district, which on further inquiry show a common milk-supply; possibly one case is located at the farm supplying that milk. Steps may be, or certainly should be, taken to remove the case at the farm forthwith, but the transmission to the milk of the infection also requires serious and prompt consideration to be of any avail. The existing powers held under Section 4 of the I.D.P.A., 1890, give powers to prohibit sale of that milk, but any possible action can only be comparatively slow in comparison with the rapid dissemination of an infective organism. Furthermore, in dealing with a case in which no help towards proof of the milk being infected can be obtained by bacteriology (as with scarlet fever), the action of preventing the sale of the milk may lead to the question of proof in a court of law, should the milk vendor consider it worth his while to so proceed.

It would appear to be time to revise the powers of dealing more promptly and more adequately with this problem.

The Scarlet Fever Epidemic in Heywood in 1924.

The occurrence of an epidemic of scarlet fever in the borough of Heywood, Lancs, in December, 1924, revealed the necessity for prompt and hitherto untried methods of action. The facts which led up to the action taken by the writer may be quoted in the first instance.

Scarlet fever had not been in evidence to any abnormal extent until Dec. 10th, when the occurrence of a case at a farm supplying 180 quarts of milk daily was reported. During the following seven days 49 cases of scarlet fever were notified, the great majority of which had been receiving milk from that farm. The writer located the source of the infection at the farm, and, on visiting there, diagnosed a further case in the farmer's household. Both cases were forthwith removed to hospital and the usual disinfection carried out. Observations at the farm led to the belief that the case had ample chance of coming in contact with the milk stored in the dairy, which was not detached from the main building. The occupants of the household passed through the dairy in order to enter and leave the house. The case discovered was that of a child who was, in fact, seen to be playing with toys in and about the milk store.

Prompt action was deemed essential. To take steps under Section 4 of the I.D.P.A., 1890, would have entailed some days' delay, and one was met with the farmer's request that the milk be analysed.

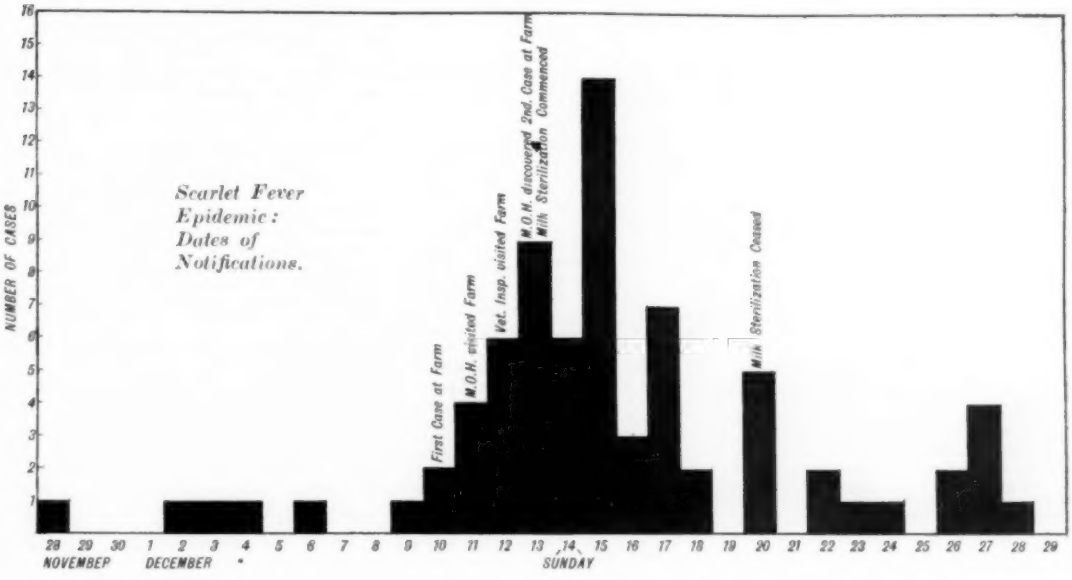
It had been the writer's endeavour during 1920 to carry out laboratory experiments on a large scale

on the exposure of certain pathogenic organisms in milk to varying temperatures, in order to further the knowledge necessary for rendering milk free from infection by pasteurisation methods. The results obtained were recorded in THE LANCET of August 18th, 1923, the most important conclusion arrived at being that *B. tuberculosis* in milk was rendered harmless to guinea-pigs when the infected milk had been exposed to a temperature of 60° C. for 20 minutes. During these experiments the thermal death-points of numerous other pathogenic organisms were noted, and in no case did any one of these survive this exposure to 60° C. Laboratory experiments, to be firmly established, require confirmatory tests to be carried out in practice in order fully to prove their value to the general public health. The above-mentioned epidemic therefore would appear to be a case for obtaining further proof of the actual value of pasteurisation methods; and although scarlet fever is not one of the diseases to which we can assign a specific micro-organism, yet the writer assumed that the causal organism would not be more resistant to heat than *B. tuberculosis*.

Steps were thereupon taken to carry out pasteurisation of all the milk produced at the farm in question without delay. On my suggesting to the farmer that an attempt might be made to "sterilise" the milk in order not to have his livelihood damaged for a week or two at least by prohibiting its sale, it was agreed to treat the milk by using what apparatus was available for this purpose at the farm. The apparatus consisted of an iron household wash-boiler with furnace below, several five-gallon milk-pails, and an all-glass thermometer.

The method adopted was that, with the boiler containing water kept at boiling point by the furnace, each pail was immersed in the extemporised water-bath and kept there until the temperature of the milk reached 65° C. The period required for the milk to reach this temperature was approximately 20 minutes. The pail was thereupon removed from the water-bath to make way for the next, and was then allowed to remain for 20 minutes in a warm situation. (It was found that by raising the temperature of the milk to 65° C. while in the water-bath, at the end of 20 minutes after removal the temperature had not fallen below the required 60° C.) The pail was then immersed in a trough of running cold water to reduce the temperature as much as possible before being transferred to the milk store ready for sale. In this way a continuous succession of pails were treated, and provided the furnace was fed, no hitch in the operations could occur.

The treatment of the milk was commenced on the day on which the second case of fever at the farm was diagnosed, and was carried out under supervision of the public health staff for the following seven days. By reference to the graph it will be seen that, by allowing an average of three days' incubation period following the first day of this improvised method of pasteurisation, a rapid diminution in the number of cases occurred. That a sudden fall to zero is not recorded does not disprove the beneficial effect of the pasteurisation. Many of the cases occurring from then onwards were traced to contact with the earliest cases, and consequently arose not directly (although probably indirectly) from the period during which the milk was the infective agent.



Suggestions for Similar Cases.

The experience gained by this epidemic would therefore, in the writer's opinion, seem to point to the usefulness of pasteurisation in dealing with a case in which action more stringent but perhaps more difficult to administer is contemplated.

To consider the better of the two feasible courses of action—e.g., (*a*) Section 4 of the I.D.P.A., 1890, and (*b*) pasteurisation—one must view the problem from a wide standpoint. Any action under (*a*) entails delay through the red tape required by the wording of Section 4; and delay in preventing perhaps 500–1000 persons from consuming even one day's supply of infected milk is a serious consideration. Furthermore, when these powers become operative, the withholding of milk to such a large section of the community without due warning and preparation for their needs is an item requiring thought, especially where infants are concerned. On the other hand, by pasteurisation methods no delay need occur, no inconvenience to the community is entailed, and no hardships are imposed upon the conscientious farmer who may not be altogether to blame for having his milk-supply contaminated through channels difficult to discover. The question of apparatus need not be given much thought, as it is rare not to find in any farmhouse a wash-boiler the dimensions of which are sufficient to allow the immersion of the usual five-gallon pails used in dairy farms.

Clinical and Laboratory Notes.

STRANGULATED OBTURATOR HERNIA; LAPAROTOMY; RECOVERY.

BY WILSON TYSON, M.D.CAMB., F.R.C.S. EDIN.,
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THE rarity of this condition is sufficient excuse for recording a case which I saw recently in consultation with Dr. W. Hotson Palmer, to whom I am indebted for the clinical history.

Mrs. S., 49, a pale, thin woman, whose health had been indifferent for several months, and who had become noticeably thinner, was seen on August 14th, two days after a journey, because of vomiting and slight abdominal pain. She stated that lately she suffered from bilious attacks once or twice a month and was constipated. No abdominal distension and no rigidity; slight general tenderness. On August 20th condition appeared to have improved, and she sat up for several hours. On August 22nd condition obviously worse; facial expression distressed. Severe abdominal pain. No action of bowels after enema, though flatus was passed. Vomiting at intervals. Seen in consultation at 5 P.M. Temperature, 100° F.; pulse, 120. Abdomen considerably distended and tender on palpation. Well-marked ladder-pattern peristalsis. No swelling in femoral or inguinal regions. Rectal and vaginal examination negative. A diagnosis of intestinal obstruction was made, and an operation was performed the same evening, Dr. Palmer kindly acting as anæsthetist.

Operation.—A right paramedian incision beginning just above the level of the umbilicus. On opening the peritoneal cavity some clear fluid escaped. The cæcum was not distended, the ordinary hernial sites were explored without result, but a distended coil of small intestine was found fixed, and on being traced down was felt to be attached to the anterior wall of the pelvis. The abdominal incision was lengthened in a downward direction and a good view obtained, when it was found that a coil of small intestine was strangulated in the obturator foramen on the right side; beyond this point the intestine was collapsed. The rest of the bowel was carefully packed off and a gentle but unsuccessful attempt was made to withdraw the strangulated bowel from the foramen. A herniotomy knife was then introduced, and the membrane notched in a downward direction. Further enlargement was obtained by working the tip of the little finger into the aperture and stretching it. Gentle traction on the bowel resulted in reduction of the hernia. There was a well-marked ring of constriction round the bowel at the site of strangulation, but it appeared viable, and on milking the contents from the distended to the collapsed bowel its colour improved. The hernial aperture was closed with two 30-day catgut mattress sutures, the abdomen closed, and the patient put back to bed with the pelvis slightly raised so as to diminish the possibility of anything adhering to the recently sutured area.

Convalescence was uneventful. The duration of the illness previous to operation was ten days; the actual strangulation can only have been of short duration, as evidenced by the viable condition of the bowel.

Ætiology and Pathology.

Obturator hernia is most frequently met with in women who have been losing fat. Out of 63 cases collected by Macready,[1] 59 were in women, whilst of 73 cases collected by Pimbet,[2] 65 occurred in women. According to Treves[1] the average age is about 60. Hutchinson[3] states that only five cases of strangulated obturator hernia occurred at the London Hospital in 20 years, whilst Rendle Short[4] reports that only one case was met with in 25 years at the Bristol Royal Infirmary.

An obturator hernia follows the obturator vessels and nerve through the upper and outer part of the obturator foramen, and pushes before it the peritoneum, subperitoneal fat, and pelvic fascia. According to Hutchinson[3] it presents three varieties: (1) It may come through above the membrane and obturator externus, being covered by the pectineus and adductor brevis; (2) it may project into the substance of the obturator externus; (3) it may pass through a gap in the muscle itself. Relation of vessels and nerve is not constant. Hutchinson[3] states that the vessels, as a rule, are below and to the outer side of the sac. Rendle Short[4] says cases have occurred in which the artery formed a circle round the neck of the sac. The nerve is generally to the outer side.

Contents of Sac.—The hernia may be preceded by a lipoma, as in a femoral hernia. The sac is usually small, and you may get a Richter's hernia of the small intestine (here the signs of obstruction may not be complete, flatus and even fæces passing). Occasionally by steady enlargement and stretching the sac may contain viscera of considerable size—e.g., the uterus and appendages—a protrusion from the bladder or the vermiform appendix may be present. It may occur in conjunction with a femoral hernia on the same side or it may be bilateral.

Signs, Symptoms, and Diagnosis.

A globular swelling, which may give an impulse on coughing, may be present under the pectineus; it is less mobile than a femoral hernia, has no palpable neck, and occupies a position rather more internal. The thigh may be flexed in order to relax the pectineus, whilst attempts to produce extension cause severe pain; adduction is resisted, as this movement tends to squeeze the hernia against the obturator externus.[5] Symptoms of pressure on obturator nerve: (*a*) Shooting or fixed pain referred to the inner side of the knee, perhaps even towards the foot; (*b*) flexion of hip; (*c*) weakness or spasm of adductors; (*d*) impaired sensation in terminal cutaneous branches of the nerve.

H. W. Marshall[6] records a case of associated pain in the knee and penis.

Vaginal examination allows of palpation of the pelvic aspect of the obturator foramen and may assist in diagnosis. Unless there is a visible swelling in the upper and inner part of the thigh, the condition is rarely diagnosed before death or operation for intestinal obstruction.

Prognosis.

The mortality is high. Treves[1] says that when strangulation occurs the death-rate is nearly 90 per cent. Hutchinson[7] says that of the five cases operated on at the London Hospital, there was one recovery. Firth, quoted by Hutchinson, states that five cases were saved out of 25, whilst Auerbach gives 11 recoveries out of 25 cases. Probably with modern operative methods and less reluctance to submit to operation the percentage of recoveries will be greatly increased.

Treatment.

There are three methods of approach: (1) Abdominal, (2) femoral, (3) combined abdominal and femoral. Opinion has come round in favour of the abdominal route, and in the performance of this operation the following points may be noted. A powerful illumination and the Trendelenburg position are of great assistance. It is easy to close the canal by a purse-string or by mattress sutures, as the peritoneum is loose at this site. For this reason, as Rendle Short[4] points out, another sac may form; to avoid this, he resected a piece of rib cartilage and inserted it into the canal, drawing the peritoneum over it by a purse-string suture. A lateral incision with the herniotomy knife should be avoided on account of the vessels. If the hernial sac contained firmly adherent intestine or omentum, it might be necessary to combine laparotomy with exploration from the thigh. The risk of recurrence after operation has already been mentioned, and Van Zwalenburg[8] records a case of fatal recurrence six years after operation for radical cure.

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2. Erichsen's Surgery, ii., 888.
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4. Brit. Med. Jour., 1923, i., 718.
5. Beesley and Johnson, p. 411.
6. Boston Med. and Surg. Jour., Sept. 18th, 1919.
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A CASE OF THROMBO-ANGIITIS OBLITERANS OF TWENTY-TWO YEARS' DURATION.*

BY F. PARKES WEBER, M.D. CAMB., F.R.C.P. LOND.,
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THE patient to whom this note refers was shown by me at the Clinical Section of the Royal Society of Medicine on Dec. 13th, 1907,[1] and was described in detail in THE LANCET for Jan. 18th, 1908, under the heading Arteritis Obliterans of the Lower Extremity, with Intermittent Claudication ("Angina Cruris").[2] It was not till later in 1908 that Leo Buerger of New York[3] introduced the term "thrombo-angiitis obliterans"—the term that is now generally used for this kind of arterial disease.

M. M., a Russian Jew, aged 60 years, who came to England at the age of 25, was seen by me first in May, 1906. The symptoms had commenced gradually in 1902 or 1903 at the age of 38, with pain in the left foot on walking, of the nature of intermittent claudication. The disease progressed by exacerbations from time to time, but there were prolonged periods of quiescence, with remission or absence of pain. In 1916[4] both lower extremities showed typical erythromelalgia-like symptoms, as well as intermittent claudication and absence of pulsation in the dorsalis pedis arteries. No amputation had been performed, although the patient had passed through periods of very painful ischæmic ulceration, when gangrene seemed imminent. During one of these periods the pain, especially at night, which had commenced with slight ischæmic ulceration in one foot, lasted so long, in spite of treatment and rest in bed, that my house physician could not understand why the patient did not demand amputation as the only possible remedy. The case had been furthermore complicated from time to time (1909, 1910, 1914, 1915, 1916) with multiple foci of superficial (sometimes "nodular") phlebitis, such as has been often observed in other cases, notably in many of those described by Leo Buerger.[5]

In 1915 the patient developed a tender localised swelling in the position of the radial artery at the right wrist. Subsidence of this swelling was accompanied by apparent obliteration of the arterial channel, as evidenced by loss of pulsation. The swelling in question was seemingly due to thrombo-arteritis, and clinically analogous to the swellings which occur in nodular thrombo-phlebitis of superficial veins.

Of late the thrombo-angiitis in this case has been non-progressive, but in May, 1924, the patient was temporarily in hospital for what I regarded as a mild attack of gout at the base of both big toes. I found then to my astonishment that there was again fairly good pulsation in the left radial artery at the wrist.[6] With small doses of sodium salicylate and sodium bicarbonate the gout soon subsided, but there were also signs of chronic interstitial nephritis with high blood pressure. The urine contained a little albumin and a few granular tube-casts. The brachial systolic blood pressure was on the left (apparently sound) side 192 mm. Hg; and on the right side it was 185 mm. Hg. The painful intermittent claudication had compelled the patient to follow a sedentary mode of life which was doubtless associated with relative excess of food, and this combination had probably favoured the onset of gout and chronic interstitial nephritis. When I saw him again in March, 1925, he complained of vertigo. The urine contained a little albumin and a few hyaline and granular tube-casts. The brachial systolic blood pressure on the left side was 210 mm. Hg. It should be stated that the blood pressure in each arm had formerly (1907) been 135 mm. Hg. He still has typical intermittent claudication of both lower extremities. There is a curious network of dilated superficial venules on the back of both feet.

Family History.—The family history in the present case is remarkable. A son, aged 20, and a daughter, aged 18, both died in 1920 with diabetes mellitus. Another son formerly suffered from bronchitis and asthma. Another son, S. M., now aged 32, has been known to me since July, 1911. He formerly had a slightly enlarged spleen and used to suffer from recurrent attacks of headache and vomiting. A daughter (N. M.), of that son (S. M.), when she was 12 months old (1922), suffered from typical recurrent attacks of Raynaud's syndrome.[7] Her Wassermann reaction and the Wassermann of her father (S. M.) were negative.

The Wassermann of the present patient (the grandfather, M. M.) was examined on various occasions and was always found to be negative. Sugar was never found in his urine. There has been no evidence of saturnism. He used to be a rather free smoker of cigarettes, like nearly all patients affected with thrombo-arteritis obliterans, a disease which in London as well as in New York is found to be almost exclusively confined to Hebrews of the male sex, who themselves or whose parents have immigrated from Central Europe. Only four out of 500 cases collected by Leo Buerger did not belong to the Semitic race.[8]

I would add that at the German Hospital during the last two years a leg has been amputated in two bad cases (both Hebrew men) of thrombo-angiitis obliterans. In one of these cases, M. G. L., aged 43,[9] microscopic examination of the anterior tibial artery and the surrounding tissue in the amputated lower portion of the (left) leg showed a very remarkable perivascular and perineural inflammatory cell-infiltration. For this finding I am indebted to Sir Frederick Andrewes, who very kindly sent me a report of the microscopic examination. He agreed with me that this cell-infiltration might perhaps represent an ascending perivascular lymphatic inflammation, which had travelled up from a septic inflammatory focus in the foot. It certainly reminds me of the fibrotic "matting" around the vessels (due to old chronic perivascular changes), described by Leo Buerger as having been found in some of his cases.[10]

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1. F. Parkes Weber: Proc. Roy. Soc. Med., Clin. Sect., 1907–08, i., 44.
2. Same author: THE LANCET, 1908, i., 152.
3. Leo Buerger: Thrombo-angiitis Obliterans—a Study of the Vascular Lesions leading to Presenile Spontaneous Gangrene, Amer. Jour. Med. Sci., Philadelphia, 1908, cxxxvi., 567.
4. See the article by F. Parkes Weber on Thrombo-angiitis Obliterans or Non-syphilitic Arteritis Obliterans of Hebrews, Quart. Jour. Med., Oxford, 1916, ix., 289.
5. Leo Buerger: The Circulatory Disturbances of the Extremities, 1924, p. 317 and elsewhere.
6. F. Parkes Weber: Return of Pulsation in Thrombo-angiitis Obliterans, Brit. Med. Jour., 1924, ii., 62.
7. Same author: Raynaud's Syndrome in a Non-syphilitic Infant, with a Remarkable Family History, Brit. Jour. Child. Dis., 1923, xx., 25. Since 1922 the child has been quite free from Raynaud's disease.
8. Leo Buerger: Op. cit., p. 277. See, however, E. D. Telford and J. S. B. Stopford: Thrombo-angiitis Obliterans, Brit. Med. Jour., 1924, ii., 1035.
9. The history of this patient had been previously recorded by Dr. Geoffrey Evans, Proc. Roy. Soc. Med., Clin. Sect., 1923, xvi., 12.
10. Leo Buerger: Op. cit., p. 320. He writes that during the stage of organisation or healing there is a development of fibrotic tissue in the adventitia, that binds together the artery, vein, and nerves.

* Case shown at the Clinical Section, Royal Society of Medicine, May 8th, 1925.

Messrs. J. and A. Churchill announce the early appearance of a new edition, with eight new coloured plates, of "Medical Ophthalmology," by Mr. R. Foster Moore, F.R.C.S.; a second edition of "Recent Advances in Medicine," by Dr. G. E. Beaumont and Prof. E. C. Dodds; and a new work entitled "The Diabetic Life: Its Control by Diet and Insulin," by Dr. R. D. Lawrence, chemical pathologist to King's College Hospital.

REMOVAL OF BETHLEM HOSPITAL.—The House of Lords passed the second reading of the Bethlem Hospital Bill, which provides for the removal of the hospital from its present site in the borough of Southwark to the Monks Orchard Estate at Addington in Surrey and Beckenham and West Wickham in Kent, and for the disposal of the existing buildings and convalescent home. Lord Southwark, having expressed a hope that the site might be preserved as an open space, Lord Burnham pointed out that if it was needed for public purposes a commercial price would have to be paid for it, otherwise provision for the insane would suffer. The London County Council have since decided to petition against the Bill on the ground that the utilisation of the site ought to be the subject of a scheme approved by the Minister of Health. It is urged that the land is needed for housing, recreative and educational purposes, and that the Bill in effect repeals a clause in the Bethlem Hospital Act of 1901 forbidding the letting of the site for a term of years "for building or for any other purposes."

Reviews and Notices of Books.

THE STOMACH AND UPPER ALIMENTARY CANAL IN HEALTH AND DISEASE.

By T. IZOD BENNETT, M.D. Lond., M.R.C.P., Assistant Physician to the Middlesex Hospital; Physician to the Royal National Orthopædic Hospital. London: William Heinemann. 1925. Pp. 344. 21s.

IN his preface the author justly alludes to the scarcity of modern books by English authors dealing with the disorders of the upper alimentary tract. And yet from his references to the literature (which includes some valuable contributions of his own) it is clear that the study of these disorders suffers no neglect in this country. The difficulty of presenting so vast a subject in a form which shall be both clear and comprehensive, and which shall embody the essentials of modern physiological and pathological teaching, has presumably acted as a deterrent to others. This difficulty the author has attempted, with no small measure of success, to overcome. He has brought to bear on the clinical problems of digestion a wealth of physiological experience, and by his familiarity with the work of his dental, radiological, and surgical colleagues, and with the needs of the student, he has avoided the imputation of producing a book of too specialist a character.

The chapters dealing with the stomach give a concise and clearly reasoned account of the present position of our knowledge of the pathology of peptic ulcer; of the disorders of gastric function dependent on organic disease; of the early diagnosis of carcinoma ventriculi; and of the scope of radiography, gastric analysis, and other laboratory investigations. Dr. Bennett is an advocate of the fractional test-meal, and his researches with the method lend authority to all his statements on gastric chemistry. A full description is given of the Sippy treatment of gastric ulcer, and while many will hold that equally good results may be obtained by less elaborate measures and that the treatment is not always well tolerated, the author claims to have employed it with satisfactory results. An account of the toxic alkalosis, which may occur in cases with commencing pyloric stenosis or renal inadequacy, should perhaps have been included. The list of indications for surgery in gastric and duodenal ulcer is most reasonable, and should give guidance to the general practitioner, whose difficulties have been increased of late by recurring disputes concerning the respective merits of surgical and medical treatment. The author asks us to hold him responsible for the opinions expressed in the book, but his general outlook is so sane and well in accord with current teaching that there is small room for disagreement. We think, however, that he somewhat over-emphasises the rarity of chronic gastritis, for is not this condition present in the majority of alcoholics, in many patients with bad pyorrhœa, and in all cases of acne rosacea? On the other hand, undue prominence is given to gastric syphilis, of which the proved cases are few.

The later chapters on diseases of the gall-bladder, liver, and pancreas contain some interesting views, especially in regard to paths of infection, and include reference to the work of Meltzer and Lyon and the indications for duodenal intubation, together with some helpful remarks on treatment. The earlier chapters, with the important exception of dental sepsis, add little to the accounts of the diseases of the mouth, pharynx, and œsophagus to be found in many of the modern text-books of general medicine.

If there is one major criticism of the book it is in relation to the poverty of its clinical description. Although the author is careful to insist on the importance of the interrogative and clinical overhaul, subjective symptoms—upon the interpretation of which all diagnosis of alimentary disease must in the first instance be based—receive too scant a reference. While it is essential that the student and practitioner should have an understanding of laboratory method and that they should appreciate its uses and limitations, it is equally essential that they should become more rather than less familiar with the early subjective and objective evidence of disease as seen at the bedside or in the consulting-room. A clearer statement of the indications for a "complete investigation," after the manner of the "indications for surgery," would enhance the utility of the book. The literary presentation and general arrangement of the volume is excellent; the illustrations (with the exception of the rather indistinct radiogram facing p. 181) and the diagrams are good; and there is a useful bibliography at the end of each chapter.

The book has no English competitor at the present time, and well-earned success may be anticipated for the volume, which will require subsequent issues to keep pace with our developing knowledge.

Diagnostik und Therapie der Magenkrankheiten. Eighth and ninth editions. By Prof. Dr. I. BOAS, Berlin. Leipzig: G. Thieme. 1925. Pp. 817. R.M.42.

THE practitioner who has little German will probably hesitate before attempting to ingest the contents of this apparently verbose and weighty tome; but if he persists he will be amply rewarded for his effort. This text-book has long been a standard German work on diseases of the stomach, and it has been considerably enlarged and to some extent rearranged. The first half is devoted to general examination and methods of treatment; under the latter the author recommends the dry expression of the stomach contents in certain cases. In the second half some 450 pages are devoted to special diseases of the stomach. The book is well illustrated, and includes some rather intriguing coloured charts, which demonstrate the chemical contents of the more common foodstuffs and beverages; under the latter seven kinds of beer are analysed.

DIETETICS.

1. *Food and the Family.* By V. H. MOTTRAM, M.A., late Fellow of Trinity College, Cambridge; Professor of Physiology in the University of London. London: Nisbet and Co., Ltd. 1925. Pp. 240. 5s.

2. *Food Values.* What They Are and How to Calculate Them. Third edition. By MARGARET MCKILLOP, M.A., M.B.E., Fellow of King's College for Women, London. London: George Routledge and Sons, Ltd. 1925. Pp. 152. 3s. 6d.

3. *Diet in Health and Disease.* Sixth edition. By JULIUS FRIEDENWALD, M.D., Professor of Gastro-Enterology, and JOHN RUHRÄH, M.D., Professor of Diseases of Children, University of Maryland School of Medicine, Baltimore. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 987. 37s. 6d.

(1) Prof. Mottram writes in a pleasant style, and although his little book is definitely intended for the lay reader it will prove interesting even to the scientific dietitian. After an account of what food can do in promoting and maintaining health, there follows a chapter in which various food views are discussed from the physiological standpoint. Chapter III. deals with the nature and functions of food, and in popular language the various constituents of food are explained and discussed. This leads on to the question of food as an energy producer, and here we meet the calorie for the first time, when Prof. Mottram is at his very best. The calorie value of various foodstuffs is discussed, and even those who, like the author, as he amusingly confesses, cannot do simple arithmetic will not find this section either difficult or boring. The food budgets of the professional man and of the working man are analysed, and the originality of the book lies in the way in which the cost of food is considered in view of the calorie value obtained.

Fresh herrings head the list for the cheapest way of obtaining a daily animal protein ration for only 2¾*d.*, and a subsistence diet of over 3000 calories can be obtained from fresh herrings, oatmeal, and cabbage, which costs only 5¾*d.* a day and yet contains all the physiological requisites! This rock-bottom diet serves as a background for criticism of food in general. The egg as a cheap food is exploded completely, for it appears that eggs are dearer than any other given food for proteins and dearer than most familiar foods except cod and sole for calories, while the vitamins contained in eggs can be obtained more cheaply in other ways. This is an example of how the subject is treated by one who seems to know as much about housekeeping as he does about physiology, and this is high praise. There are a few minor points which may be criticised. "Acidity" of the blood, even when the offending word is put between inverted commas (p. 86), is not a good term, and if "rarely met with outside the walls of a hospital" is never met with inside. To say that cod-liver oil will alter "the state of a child within a few hours from dullness and disinterest in food to playfulness and a good appetite" (p. 99) is surely exaggeration, and the statement that "all children brought up on dried milk need a teaspoonful or two of orange or tomato juice per day" (p. 106) is a little dangerous and vague in view of the fact that even this quantity will fail to prevent scurvy in some cases; in a book intended for the lay public the minimum should be set higher. We commend the book to all interested in the subject, and this is a very large section of the public.

(2) To those who are reading Prof. Mottram's book, "Food Values" will prove useful for the tables it contains. Since its first appearance in 1916 the author has had much practical experience in the Ministry of Food during the war, and consequently much of the present edition has been rewritten, the most important change being the substitution of English analyses of food for American analyses. The preliminary part of the book contains an account of food requirements, a whole chapter is devoted to vitamins and another to the brown bread controversy, while the greater part consists of tables of food analyses, dietary requirements, and daily diets.

(3) "Diet in Health and Disease" is in quite a different category from the other two books here under review. It is essentially a reference book to meet the needs of the medical profession, and contains a full treatment of the whole subject of food analysis and food requirements, while the bulk of the work is taken up with an account of suitable diets for use in disease. The first edition appeared in 1904, and since then the book has been constantly revised, so that the sixth edition not only differs considerably from the first, but also from the fifth and contains many additions, while many sections have been rewritten. For example, changes in the sections on food poisoning, on diabetes, on cœliac disease, and on nephritis have been rendered necessary by the progress of medical science. The authors claim that dietetics may now be regarded as probably at least half scientific and half empirical, but a perusal of this book, with its many tables, gives the impression that this is a modest estimate. Not a few of the dishes discussed are unknown in this country.

DIATHERMY IN GONOCOCCAL INFECTION.

Treatment of Gonococcal Infection by Diathermy. By E. P. CUMBERBATCH, M.A., B.M., B.Ch. Oxf., M.R.C.P., Medical Officer in Charge of the Electrical Department of St. Bartholomew's Hospital; and C. A. ROBINSON, M.B., B.Ch., D.M.R.E. Camb., Medical Officer in Charge of Electrical Department, West Middlesex Hospital. London: Wm. Heinemann, Ltd. 1925. Pp. 150. 7*s.* 6*d.*

THIS admirable monograph records the results obtained by the writers in the treatment of gonococcal infection (with or without complications) by diathermy. The treatment is described in detail and the facts are presented so moderately as to leave no doubt in the mind of the unbiased that diathermy in the hands of careful experts has a wide field of usefulness in the treatment of these conditions. The authors very wisely do not claim absolute cure as inevitable after a course of treatment by diathermy, but their cases quoted—with clinical notes before and after treatment—are in almost every case highly satisfactory.

An appendix describes five cases of arthritis where the cervix uteri seemed to be the focus of infection, but where gonococcal infection was not proved by pathological tests; these cases showed gratifying improvement after application of diathermy to the urethra and cervix, and should stimulate practitioners who have patients suffering from arthritis to have a pelvic examination made in every case where the primary focus of infection has not been satisfactorily discovered.

SURGERY OF THE EYE.

A Handbook for Students and Practitioners. Second edition. By ERVIN TÖRÖK, M.D., and GERALD H. GROUT, M.D., Surgeons to the Herman Knapp Memorial Eye Hospital, New York. London: Baillière, Tindall and Cox. 1925. With 510 illustrations. Pp. 484. 30*s.*

WE have here a sound guide to the chief operations of ophthalmic surgery. This book opens with two chapters for which house surgeons should be especially grateful: the first on surroundings and general preparation for eye operations, the second on instruments and their management. The operations described in the second part of the book are those which in the hands of the majority of experienced ophthalmologists procure the best results. Under the heading Cataract, linear extraction with a keratome and flap extraction with a Graefe knife, with or without iridectomy, are described in a way which should be really helpful, the numerous figures assisting much; the intracapsular methods—e.g., Smith's and Barraquer's—are only briefly referred to. Under Glaucoma the three main operations—the classical iridectomy and sclerectomy according to the two methods of Lagrange and Elliot—are fully described; less important operations such as the cyclodialysis of Heine are also referred to and figured.

The multiplication of methods described for lid operations in text-books is apt to be confusing to the student, especially the various operations for entropion and ectropion and for ptosis. The procedures detailed in this book are well chosen, but may need supplementing for exceptional cases. The operation for extirpation of the lacrymal sac is so important that it might have been given a rather fuller exposition, especially with regard to the normal anatomy of the lacrymal canal, and we miss any reference to the alternative (intranasal) methods of dealing with dacryocystitis.

The large number of illustrations help to make the descriptions intelligible. On the whole, this is one of the best books on the subject that has reached us.

MODERN NURSING OF CONSUMPTION.

Second edition. By Dr. JANE WALKER. London: Scientific Press, Ltd. 1924. Pp. 75. 2*s.* 6*d.*

THIS little book on the nursing of consumption is full of useful obiter dicta, common sense, and wit. There can be no doubt that sanatorium nursing taxes the patience of a nurse to the utmost; outside the sanatorium there is nothing but bucolic monotony, and inside there is a routine seldom, if ever, enlivened by that whiff of chloroform and gleam of the surgeon's knife which provide the thrills making surgical nursing so curiously popular. Dr. Walker has done a great service in describing sanatorium nursing in such a way that, though she does not invest it with an impossible halo, she introduces a certain amount of much-needed colour into the picture.

MY MOORLAND PATIENTS.

By a Yorkshire Doctor. Edited by J. C. POWELL. London: John Murray. 1924. Pp. 242. 7s. 6d.

WE are glad to see that this book, the first edition of which was reviewed in our columns, is now issued in a cheaper edition, especially as the cheapness, so far as we can see, has not been put into the paper, the printing, or the illustrations. As a record of a state of manners and customs which are rapidly passing, or indeed have entirely disappeared, the volume is most valuable, and makes excellent reading. The "Yorkshire Doctor" was Dr. R. W. S. Bishop, who died in 1921.

EPSOM COLLEGE: THE ANNUAL MEETING.

THE annual meeting of the governors of Epsom College was held at the offices, 49, Bedford-square, London, W.C., on June 27th, when Dr. Raymond Crawfurd presided. The secretary read the names of the successful candidates as follows:—

"Christie," "Pugh," and Ordinary Pensionerships.

	Votes.		Votes.
*Baynes, Donald	4755	†Goulston, Arthur . ..	1428
†Ayres, Edith C.	2004	†Willis, Joseph D.	1399
†Chatterton, Percy . ..	1468	‡Kennedy, Florence A..	1334
†Stephenson, Hilda ..	1440	‡Shaw, Annie C.	1124

* "Christie" Pensioner. † Ordinary Pensioners.
‡ "Pugh" Pensioners.

Foundation Scholarships.

	Votes.		Votes.
McClintock, John H. T..	10764	Ryle, Ian N...	6319
Lewthwaite, Christopher.	9809	Marsh, Thomas A. ..	6201
Emrys-Roberts, Hugh M.	9491	Sanderson, Paul B. ..	6026
Beck, Geoffrey A.	9025	Wolfenden, Henry C. L.	5666
Allen, Edward V. M. ..	8863	Farman, Henry C. ..	5095
Pinniger, John L.	8208	Kee, Eric M...	4821
Burgess, Christopher J. V.	6648		

Addressing the governors, the Chairman said that he hoped this would be a memorable year in the annals of the College and one pregnant of far-reaching results. Increased support from the profession and others had enabled the Council to face increased commitments in various directions. In their determination to attain the highest educational level, they had made substantial improvements in the pecuniary prospects of the masters. The year had seen the completion of the rebuilding of the chapel as a memorial to the masters and boys who fell in the war. The reconstructed chapel, a brick basilica of admirable internal proportions, now embodied worthily the spiritual aspirations of the College. A new chemical block, that had been thought and talked about for so many years, was now actually in hand, and had been made possible by several generous bequests that had come to hand. The vacated space would afford much-needed additional accommodation for class-rooms and lecture-room, and for an improved natural history museum. The Council were now in the position, by the munificence of a good benefactress, to carry out a complete transformation of the existing library, and to make it far more attractive and serviceable to the boys, and Dr. Crawfurd expressed the hope that similar help from some other quarter might be forthcoming towards the equipment of a museum, worthy of a school that supplies so many recruits to scientific professions; £500 would solve all difficulties in that direction. Another need of the College, that might well appeal to those of sporting instincts, was the levelling and extension of some parts of the playing fields, so that all the boys might play their games under more inspiriting conditions. The Bursar had secured an estimate for the work, which showed that it could be well done for £1500. These things were beyond the capacity of the normal revenue of the College, which this year was bearing the cost of an extensive substitution of electric light for gas, and which would almost at once have to provide better washing and drying facilities in the Lower School, and probably in the not distant future to undertake the centralisation of a scattered and wasteful system of heating and hot-water supply.

The Chairman concluded on a note of gratitude to all who had helped them; to their good subscribers, donors, and benefactors; to their organisation of local secretaries, which he wished to extend far more widely; to the great medical institutions, and the medical press. He also asked for special thanks to Mr. Gerald Stanley who had established at his own expense a scholarship giving free education at the College, and to Mr. Arthur Chudleigh, who had given to the chapel a silver-plated cross, six candlesticks, and vases for the altar, and an alms dish. He hoped that the generosity of all these might prove contagious in many quarters.

On the motion of the Chairman, the report of the income and expenditure account was adopted and the Council and officers for the year were elected or re-elected. On the motion of Dr. F. de Havilland Hall, seconded by Sir StClair Thomson, Dr. Crawfurd, who has worked so untiringly for the College and has collected over £1000 in subscriptions, was elected a Vice-President.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS: PROVINCIAL MEETING.

A PROVINCIAL meeting of this Section was held on June 27th at Manchester, Mr. H. E. G. BOYLE, President, in the chair. The members were most hospitably entertained by their northern fellows, and after luncheon in the University Refectory adjourned to the lecture room and physiological laboratories.—Dr. H. P. FAIRLIE read a paper on Chloroform Anæsthesia, in which he deprecated the view that chloroform should never be used. It was, in his view, often the best anæsthetic, but only in the hands of those who were thoroughly experienced in its use. The fatigue caused to the patient by prolonged ether inhalation could often be averted by judicious employment of chloroform.—Dr. J. BLOMFIELD pointed out the difference between the two kinds of chloroform fatality, one avoidable and the other not, and agreed that when proper selection of anæsthetics for all cases was practised chloroform would often be chosen and used by the expert.—Dr. S. R. WILSON described the causation of ventricular fibrillation, and pointed out the fallacy of preliminary atropine if chloroform fatalities were ascribed to vagus inhibition.—Dr. W. J. MCCARDIE alluded to the advantages of mixture with varying proportions of chloroform.—Mr. G. RAMSEY PHILLIPS alluded to the arrangement for increasing concentration of chloroform into the Vernon Harcourt inhaler.—Dr. KIRKBY THOMAS described the safety inherent in the low position of the patient's head.—Dr. ANDREW WILSON described deaths which had occurred before the administration of the anæsthetic had commenced and agreed with the observations of Dr. Fairlie and Dr. Blomfield.—Dr. H. W. FEATHERSTONE described the difference in resuscitating those patients who collapsed under chloroform compared with similar cases under other anæsthetics.—In the laboratory Dr. S. R. WILSON and Dr. S. MCSWINEY demonstrated the effects of intravenous injection of adrenalin into animals anæsthetised with ether and with chloroform, and a number of charts and of different kinds of apparatus was also demonstrated.

THE LANCET.

LONDON: SATURDAY, JULY 4, 1925.

MALARIA IN EUROPE.

IN 1924 the Permanent Health Committee of the League of Nations appointed a Malaria Commission composed of seven members, several experts, and a number of corresponding members to inquire into the incidence and epidemiology of malaria in Europe, and to investigate the problem of quinine administration. The results of these inquiries in Italy, Russia, and the Balkan States have recently been published,[1] and we are informed that further reports on other countries will be issued from time to time. The itinerary of the tour was a comprehensive one, and occupied a period of three months of continuous travel. Commencing in May, 1924, the Commission visited Dalmatia, Serbia, Greece, Bulgaria, Roumania, Russia (Ukraine, Don basin, Caucasus, Volga region, and Moscow), and Italy, eventually dispersing at Rome on August 28th. A large amount of data of a general nature has been accumulated, though no facts of a novel or striking nature have emerged. The greater part of the information was obtained from the health departments of the countries visited.

Special interest centres on the spread of malaria in Russia which has taken place since the war. The most malarial part of this country is undoubtedly the Middle Volga district. Before the war 400 cases of malaria for every 10,000 inhabitants were registered there yearly, and in 1923 in the German Republic of the Volga the disease became epidemic, so that approximately half the inhabitants were infected. This extraordinary spread of malaria in the Volga district, as indeed in the whole of Russia, was largely a result of the European War, aided by civil war in Russia with all its consequences. The population was forced through fear of starvation to emigrate to Turkestan, Bokhara, and the Caucasus, whence the severe forms (subtertian parasite) were imported. In the Volga district the geographical features of the river are held to be mainly responsible for the spread of the disease. It appears that the meadows on each side of the river are inundated in spring time, and on subsidence of the floods permanent pools remain which constitute the breeding grounds of mosquitoes. In this district there are, as a rule, two rises of malaria incidence during the year; the spring increase commences in March, when the anophelines are not found; the autumn epidemic, commencing about August, is undoubtedly spread by the swarms of newly-hatched mosquitoes which then abound. The spring epidemic consists, as has been noted in Salonica, Palestine, and elsewhere, almost entirely of benign tertian malaria, probably relapses of a previous infection; in August and September the subtertian parasite predominates, and has accounted for 85 per cent. of the cases. The quartan form appears to occur only at the cold season of the year. As regards Russia in general, the information indicates that the accounts of the effects of malaria, as described in some English journals, are greatly exaggerated. In that country epidemic malaria reached its maximum in 1923, when the deaths due to the disease were estimated at 60,000 (0·4 per mille of population), a figure hardly comparable with the average death-rate in badly infected districts in British India, where the disease usually causes a death-rate at least ten times that figure. The occurrence of epidemic malaria in Europe is by no means a new event. The most important factors concerned in the recent epidemic appear to have been: (1) The importation of new cases and carriers into areas where malaria was already endemic; (2) the importation and aggregation of susceptible people, particularly in connexion with the settlement of refugees and colonists in the endemic areas; (3) various social and economic circumstances, especially, in some countries, a great lack of quinine. Undoubtedly, if the countries concerned had a properly organised medical or sanitary service much could be done to eliminate nearly all these factors. As regards the endemicity of malaria in Europe, the important rôle of "house infection" in the spread and maintenance of the disease impressed itself greatly on the Commission. It is essentially a family or household affair, to be explained by the close and continuous association existing in most dwellings between the human source of infection, the insect carrier, and the human recipient to which the domestic habits of *Anopheles maculipennis* especially lend themselves.

The large amount of data collected by a commission of such a comprehensive nature makes it difficult to crystallise the main trend of the work, but the general impression may best be gathered from the wholly admirable summary by Colonel S. P. JAMES, the British representative. He points out that, with the exception of Italy, the vital statistics with reference to malaria are inadequate and are therefore not comparable with the methods usually employed in malarious tropical countries. In the absence of these necessary statistics the information as to the past and present incidence of malaria in the countries visited is vague and imperfect, but it is known that from time to time, at irregular intervals, all these countries have experienced, in addition to this endemic malaria, striking invasions of the disease in epidemic form, which has spread to localities previously free. Very little information could be obtained as to the effects of the recent epidemic wave. In Dalmatia, it is true, and in Serbian Macedonia numbers of patients were seen suffering from greatly enlarged spleen, the result, probably, of the epidemic disease, but elsewhere the epidemic had abated almost completely and the distribution of malaria has once more become restricted to its original endemic centres. Little information was likewise obtainable about the mortality which the epidemic may have caused in different countries and still less about the severity of the cases. To those with experience of malaria in tropical countries the absence of evidence of a high fatality was very surprising. The impression obtained, however, was that there is no area in Europe in which the fatality of the recent wave of malaria is even remotely comparable with the fatality of the disease as seen in the Punjab during the epidemic of 1908, when the deaths were 13 times more numerous than the normal. In Greek Macedonia the epidemic of 1923 is said to have caused 700 deaths amongst 10,000 refugees, but none of the figures given, either here or in Roumania or Bulgaria, is anything but approximately correct. In suggesting antimalarial measures due consideration has to be paid to the incompleteness of the sanitary services which has resulted from the war, and to the fact

[1] League of Nations Health Organisation: Malaria Commission. Report on its Tour of Investigation in Certain European Countries in 1924. CH. 273. Geneva. March 25th, 1925. Published in Great Britain by Constable and Co., Ltd. 6s. 9d.

that in Europe malaria is one of the least, in contrast to the tropics, where it constitutes the most dangerous endemic disease. The Commission therefore deprecates the undertaking of costly antimalarial measures in circumstances where such action is of doubtful value and when the money would be better employed in other essential health services. Every effort should therefore be made to combat endemic malaria in Europe in the *houses* of the people themselves rather than in the environment. The competent sanitary authority should enter the houses of the people, treat those infected, and educate them to kill off the few sluggish "domesticated" anophelines whose wants are all supplied in that particular house and who constitute the chief sources of infection. In this simple way more good will be done than by the most extensive measures against larvæ and adult insects in the environment. Unfortunately, this decision involves the onus of overcoming the well-recognised difficulty that medical officers and sanitarians who have become interested in the elimination of breeding places and in engineering problems of drainage are usually loth to discard those measures. The outstanding fact is once more emphasised that it is by a well-equipped medical and public health service that malaria in Europe will be eventually eradicated. That this has been the case in England is set out forcefully by Colonel A. W. ALCOCK on another page. By applying this lesson to European countries in general the League of Nations Commission has rendered a valuable and permanent service.

PAY HOSPITALS FOR PATIENTS OF MODERATE MEANS.

SUNDAY last, June 28th, was "Hospital Sunday"; the financial results of the day have not yet been published, but it is to be hoped that a substantial sum will be returned to the coffers of the Metropolitan Hospital Sunday Fund. The hospitals are struggling against grave financial difficulties and their future is problematical unless they can be established on some sounder basis than the present one. Among other schemes proposed is the extension of their wards to paying patients. The question of institutional accommodation for the middle-class patient has become acute during recent years. Many schemes have been put forward on paper and several have been tried in practice, with a varying measure of success. The Conference of the British Hospitals Association, held in Manchester on June 25th, debated the subject once more. Sir WILLIAM MILLIGAN pointed out that the poor are admirably looked after and cared for, while the rich are quite competent to look after their own interests; but an increasingly large number of those of moderate means find it more and more difficult, owing to the expense entailed, to secure those benefits from recent advances in medicine and surgery to which they are entitled. Consequently, and more especially within recent years, large numbers of the middle classes are forced, often against their inclinations and wishes, to seek treatment in existing voluntary hospitals, with the result that waiting lists attain quite inordinate dimensions and serious economic loss to the community results from delay in admission and the prolonged abstention from work of the wage-earner. Moreover, the public have recognised that modern medicine and surgery have become more complex and more detailed, and that the numerous adventitious aids to exact diagnosis are found to exist to more advantage within the walls of some great institution rather than in the chambers of any individual physician or surgeon, however well equipped his consulting rooms may be. The tendency, therefore, to resort to institutional treatment is not unnatural, is becoming more accentuated every year, and is a tendency which is likely to go on growing, considering the undeniable advantages which it presents. The provision of a limited number of wards or beds for paying patients is already an accomplished fact in certain hospitals, and has been the means of meeting, to some slight extent, the existing demand for institutional treatment at moderate fees. At the moment it is at any rate a quite inadequate provision for existing requirements, does not always afford that privacy, which is its main objective, and proves a complicated arrangement so far as hospital accounts and hospital administration are concerned.

Sir WILLIAM MILLIGAN'S proposal is that a "pay hospital" should be established in connexion with each large general hospital. Certain services, such as lighting, heating, laundering, catering, and nursing could be arranged in common for the two institutions, thus lightening the financial burden and widening the experience of the nursing staff. The fundamental regulations suggested by Sir WILLIAM MILLIGAN were:

1. That the Committee of Management should consist of three members elected by the parent hospital, three by the preference shareholders, and three prominent citizens, and should meet monthly.
2. That a resident medical officer should take charge of the patients under the direction of the specialist.
3. That no patient be admitted without a written recommendation from a duly registered medical practitioner.
4. That the income limit for admission should be £600 and the charge be 6 guineas per week; fees for special nurse, anæsthetic, X ray, or pathological report being extras.
5. That the patient be free to employ any member of the staff of any hospital, arranging the fees with him personally.
6. That the practitioner on whose recommendation the patient is admitted have free access to see his patient at any time but that he have no responsibility in the matter of treatment.
7. That if a case does not necessitate the advice of a consultant the onus of treatment shall rest with the resident medical officer after consultation with the patient's general practitioner, and that the former may perform an operation if the patient be unable to afford the fee of the consultant.
8. No case of phthisis or infectious disease shall be admitted.

Sir WILLIAM MILLIGAN put forward a specimen budget to show that the institution would be a sound financial proposition, and suggested that the financing of such a "pay hospital" might be approached in one of three ways:—

1. By borrowing the whole of the money at 5 per cent. on the security of the building and of the parent institution, and creating a sinking fund of 1 per cent., which would redeem it in 36¾ years.
2. One-half of the money required might be borrowed at 5 per cent. on the value of the building, and the other half by the issue of 6 per cent. cumulative preference shares and ordinary shares; or
3. The formation of a limited liability company with a capital of £50,000, divided into 30,000 £1 6 per cent. cumulative preference shares and 20,000 £1 ordinary shares, the whole of the ordinary shares to be held by the parent hospital.

As the subsequent discussion emphasised, the success of such a scheme depends entirely on the active coöperation of the medical profession. Whether this would be obtained seems to depend mainly on the wording of Clauses 2 and 6. The general practitioner is to be "allowed access" to his patients while in hospital, presumably as a friend, for the satisfaction of his scientific or personal interest in the case. It is doubtful whether there is anywhere in the world a more disinterested body of men than the general practitioners, but no amount of scientific enthusiasm or devoted service will support and educate a growing family. It is on these middle-class patients that the practitioner is dependent for his

living; he can scarcely be expected to encourage a scheme that will take these patients off his visiting list as soon as he has diagnosed any serious malady. Nor can the patient be expected to desire the continued attendance of the practitioner when he finds himself under the care of a resident medical officer, whose competency is vouched for by his position in a great organisation. The "family doctor" is the backbone of the medical profession, and though he may have many failings in the eyes of the specialist and the research worker, it is by his improvement and not by his abolition that the public health will best be served. Some such scheme as that suggested by Sir WILLIAM MILLIGAN is undoubtedly called for, but it will have a greater hope of successful life if the general practitioner be left in charge of his patient as he would be in a nursing home, with the enormous advantage to everyone of coöperation with the hospital staff. The sisters in charge of nursing homes find no insuperable difficulty in the absence of a resident medical officer and the attendance of a number of general practitioners; there is no reason why the same working should not apply to the "pay hospital." The harassed practitioner fervently desires to see the establishment of some institutional treatment that shall be within the means of his poorer paying patients, but he very rightly and properly desires that any such scheme shall leave him in responsible charge of the conduct of the case.

WELFARE OF THE BLIND.

THE fifth annual report of the Advisory Committee on the Welfare of the Blind indicates that further progress has been made towards the solution of the problem of making life tolerable for this unfortunate class of the community. Since the qualifying age for the receipt of the old age pension was lowered for blind people from 70 to 50, 85 per cent. of those so qualified are in receipt of the pension, the remaining 15 per cent. being presumably in possession of some private means. Schemes for promoting the welfare of blind persons have now been presented by the 145 local authorities concerned. All have been accepted and the great majority are in full operation. Of the total number of blind in England and Wales—36,518—more than 32,000 are over 16 years of age, and of these about one-quarter are actually employed either in workshops for the blind or as "home workers," the definition of which term appears to be somewhat elastic. The present report records some progress in the efforts made to obtain employment for blind persons in ordinary industrial concerns and in work normally performed by sighted persons. So far as the more skilled processes go this has not been found to be practicable, but a number of firms in the Midlands have expressed their willingness to give blind persons a trial period of employment on such operations as the preparing and labelling of tins, stringing tennis rackets, taping, smearing and packing of golf balls, armature winding, cardboard box making, gauging lamp glasses, assembling and packing cycle bells, and the sorting of hemp. As it is never expected that the average blind man can earn a living wage, the report recommends that voluntary agencies should receive official grants of not more than £20 per annum per head in respect of blind persons employed in ordinary factories and workshops.

There remain nearly 60 per cent. of the blind in the country who are classified as unemployable, some of them mental or physical defectives or afflicted with deafness, the majority of them having become blind in adult life, after which the difficulties of training for suitable employment are, of course, indefinitely increased. A great advance in the provision of assistance for unemployables has been made through the institution of the home-teaching service. At the present time there are 111 sighted and 159 blind or partially blind home-teachers employed by the various agencies and local authorities in the country in this capacity. Besides giving instruction in the reading of embossed literature and in simple pastime industries, they are expected to be friend and adviser to their pupils in domestic and social matters, and all those who are newly appointed are required to obtain the home-teachers' certificate of the College of Teachers of the Blind within two years. To well-educated young women with a natural ability for social welfare work the report commends this service as providing a useful field of work with fair remuneration, in which their efforts would be abundantly repaid by the results achieved. The report shows that consequent upon the passing of the Blind Persons Act of 1920 there has been a very substantial improvement in the general circumstances of the blind in the country. The triple partnership of the voluntary agencies, local authorities, and the State in dealing with the welfare of the blind has been more than justified. One matter is touched on in the report which needs to be emphasised. At present, owing to the lack of suitable schools for the partially blind, a good many of these children, more especially the high myopes, are being educated in blind schools, whereas it would be far more to their advantage, and ultimately an economy to the State, if schools or classes of the type initiated by the London County Council were made more generally available. The after-care of this class falls more properly within the sphere of the juvenile employment committees of local education authorities. The Board of Education are rightly proposing to press for the provision of further special accommodation for this class of children.

THE RADIOLOGY CONGRESS.

THE International Congress of Radiology which is being held in London this week opened very pleasantly on Tuesday evening, June 30th, with a reception to the delegates and their friends, given by Dr. C. THURSTAN HOLLAND, the President, at the House of the Royal Society of Medicine, 1, Wimpole-street. A large number of guests was present, forming a truly international gathering. In the library an interesting display of old books dealing with medical electricity was on view, and in the Barnes Hall Dr. MURRAY LEVICK entertained the company with a description of penguin life in the Antarctic, illustrated with limelight views taken by himself. This was followed by a cinematographic film of certain tuberculous conditions, demonstrated by Dr. LEWIS GREGORY COLE, of New York. The subsequent meetings of the Congress are being held in the Central Hall, Westminster, commencing with a discussion on international units and standards for X ray work, and concluding on Saturday, July 4th, with a meeting of the international delegates to consider the formation of an international committee. The work of the Congress is divided into three sections, radiology, physics, and actino-therapy respectively, and with regard to the latter branch we would draw attention to the paper on a Light Department in a Hospital for Surgical Tuberculosis, by Sir HENRY GAUVAIN, in our present issue. This Congress has been promoted and organised jointly by three societies in Great Britain, all interested in similar objects, the Rontgen Society, the Electrotherapeutics Section of the Royal Society of Medicine, and the British Institute of Radiology, and it is a source of gratification to British radiologists that they have had promises of world-wide support. The Congress itself will determine whether this meeting will form the first of a regular periodic series of such meetings, but however that may be, we feel assured that the laborious work carried out by Dr. HOLLAND, Dr. STANLEY MELVILLE (General Secretary), and the organising committee will prove a source of pleasure, interest, and profit to all whose interest lies in developing radiology—the infant prodigy of medicine.

Annotations.

"Ne quid nimis."

ROYAL COLLEGE OF PHYSICIANS OF LONDON: CENTENARY CELEBRATION OF THE PRESENT COLLEGE.

A CONVERSAZIONE was held at the House of the Royal College of Physicians on the evening of June 25th, to celebrate the centenary of the occupation of the present building of the College. The guests were received by the President, Sir Humphry Rolleston, and Lady Rolleston. A large number of Fellows, Members, and ladies attended. The College buildings are admirably adapted for a reception of this kind and the valuable possessions of the College were shown to great advantage. The library, where the President received the Fellows and guests, is a large and attractive room. The new lighting shows its contents to advantage, including the beautiful mace, which is one of the chief of the College treasures.

An interesting historical note was attached to the programme given to each guest on arrival. From this we learn that the Royal College of Physicians was founded by Thomas Linacre, the famous scholar, who obtained from King Henry VIII. a Royal Charter, dated Sept. 23rd, 1518, granting certain powers to the College for the purpose of controlling those who practised medicine in the City of London and seven miles around. The powers of the College were extended by later charters so that authority was exercised over all those who practised medicine in England, with the exception of doctors of medicine of Oxford and Cambridge Universities. Thomas Linacre was elected the first President, and five other physicians were named as Fellows of the College with power to add to their number. The first meetings of the College, for the transaction of business, were held in Linacre's house in Knightrider-street, in the City, and here the College remained until 1614, when a new house was provided at Amen Corner, on the site of the present House of the Canons Residentiary of St. Paul's. This College House was burned down in the Great Fire of 1666, and in 1674 the College removed to a new building in Warwick-lane, in the City, which had been built from the designs of Sir Christopher Wren. Here it remained until 1825, when it removed to the present building. The library contains about 40,000 volumes, of which more than 4000 were printed before the year 1600. The collection is not confined to medical works alone, for it contains sections comprising early editions of the classics, theology, law, and the sciences. The College possesses 112 portraits in oil of distinguished Fellows, and the collection is representative of many of the portrait painters in England during the last three centuries. These are placed in the large library, the Censors' room, the reading room, and on the staircase. The handsome panelling to be seen in the Censors' room dates from the year 1674, and was removed from the College in Warwick-lane, where it was placed through the munificence of Dr. Baldwin Hamey. The portraits of past Presidents and Fellows form a most striking and interesting collection. They are shown to great advantage in the library, Censors' room, reading room, and hall of the College. Among these, those painted by Gainsborough, Reynolds, and Romney are specially worthy of notice. There is also a portrait by Van Dyke and a painting by Zoffany.

Among the entertainments there was a fine exhibition of cinematograph films illustrating nature-study. It was pleasant to hear that these were of British origin. An interesting programme of music was given by the Vale Lane Sextette. The engraved portraits of Fellows of the College on view in the small library and book-store were well chosen and attracted a good deal of attention.

The conversazione was a most successful one. This notable historic incident in the history of the College was, by common consent, very suitably commemorated, and those present spent an interesting and instructive evening. The President and those responsible for the arrangements are greatly to be congratulated on the success of a very interesting commemorative function.

THE USE OF ARSENIC IN PUERPERAL FEVER.

THE use of arsenical salts in puerperal infection was the subject of a paper by Marbais at the Congress of Strasbourg in 1923. Dr. H. Lapervenche has now published a record of 28 cases treated in this way at the obstetric clinic in Bordeaux. The salts employed were sulpharsenol (Pluchon) and novarsenobenzol (Billon), which were shown to have a strong bactericidal action on streptococci in vitro and in rabbits. They can be used prophylactically in cases where the labour has been prolonged and infection is suspected. The only contra-indications are the presence of serious hepatic trouble and uræmia, cancer, and what the author calls "bacillaires," presumably the subjects of chronic bacterial infections. It is usual to allow a day to elapse between the first and second injections, and then to give injections on two successive days with an interval of one day between. The urine should be watched for albumin. Intravenous or subcutaneous injections of 0·1 gr. of N.A.B. or 0·06 gr. of sulpharsenol is the initial dose, and subsequent injections should not rise higher than 0·15 gr. of N.A.B. and 0·12 gr. of sulpharsenol. No evil results were noted beyond the local discomfort of the injection, and the results were most gratifying, the fever being controlled by the drug. These cases were streptococcal, and syphilis was excluded by the Wassermann reaction. The method seems worthy of a more extended trial.

JAMES MEASE.

IN the number of *Annals of Medical History*, published in March, 1925, being No. 1 of Vol. VII., Dr. William Snow Miller, of Wisconsin, reprints a paper read before the Medical History Seminar of the University of Wisconsin in November, 1923. The subject of the paper is Dr. James Mease, who is interesting as being the author of the first contribution of note upon hydrophobia published in America. From another point of view he is of interest to ourselves as having fallen foul of William Cobbett (an easy thing to do), and Cobbett, as readers may know, was a good friend to THE LANCET in early days. Mease graduated in medicine in 1792, being one of the first seven graduates from the medical department of the University of Pennsylvania. This University had arisen after sundry vicissitudes out of the College of Philadelphia, which, in its turn, was begotten by a pamphlet written by Benjamin Franklin in 1749. Mease's paper upon hydrophobia was first published in the *American Museum* in 1790, and this paper was subsequently elaborated into his thesis for the doctorate. Dr. Miller gives many quotations from the thesis which show that Mease was in advance of his time in his views on the disease. He maintains that disease only arises from a "poison of a peculiar nature in the saliva of a rabid animal, belonging to the genus *canis*." He also is of opinion that the poison, to manifest its effects, must find entrance to the body through a wound. As to treatment he recommended excision of the bitten place, if possible, together with the cautery before any symptoms had appeared. After they appeared he considered any treatment useless. The year after his graduation—namely, in 1793—there was a serious epidemic of yellow fever in Philadelphia during which Mease was attacked and was treated by Rush, being bled to the extent of 75 oz. in five days. He recovered and was appointed port medical officer of Philadelphia. Benjamin Rush, the professor of

clinical medicine in the University, treated the fever by free purgation and copious bleeding, methods which were warmly supported by Mease, although other medical men disapproved of them. These dissenters found a mouthpiece in Cobbett, who published a bitter attack upon Rush in *Peter Porcupine's Gazette*, which led to an action for libel in which Cobbett was cast in 5000 dollars damages. Mease gave evidence in favour of Rush and this led to an attack on him by Cobbett in the opening number of his other paper the *Rush Light*. Like most people in authority Mease also got into trouble with certain persons owing to his allowing vessels to proceed from Philadelphia to Burlington without performing quarantine, and Dr. Miller gives a full account of the quarrels. Mease was not only a physician, but an active member of Philadelphia society, giving generous support to that city's many intellectual and humanitarian institutions. He married in 1800 Sarah Butler, by whom he had two daughters and three sons. The sons, on attaining the age of 16, changed their name to Butler under their grandfather's will and one of them, Pierce, married Fanny Kemble. Mease died in Philadelphia in 1846.

FRAMBŒSIAL OSTEITIS.

THE remarkable condition called "goundou" or "henpuye," and characterised by bony outgrowths on the sides of the nose, has been recognised as prevalent in parts of tropical Africa since MacAlister in 1882 noted the existence of "horned men in Africa." In 1900 Chalmers described the disease on the Gold Coast in THE LANCET [1] under the name of henpuye, and reported five cases, though he doubtless saw many others and operated on several; he was the first to attribute its causation to frambœsia or yaws. Major Botreau-Roussel, of the French Colonial Army Medical Service, has now published [2] a most complete work on this curious affection. After four years' residence on the Ivory Coast, during which time he only saw one case, chance brought him two patients, on whom he operated with success; as a result more and more patients came for treatment, until he had seen 130 cases and operated on 113. The outgrowths on the nose limit the field of vision and, in the more extreme cases, to such an extent as seriously to handicap the sufferer in the struggle for existence, which is a severe one in these regions; and the author believes that many of these unfortunates are quietly destroyed by their relatives, who cannot afford to feed a useless member of society. It is not surprising, therefore, that the natives should come from long distances to be relieved of their disability by operation.

From his unequalled experience of the disease, Major Botreau-Roussel has formed an opinion on the following points. The lesions of the face are the most striking but not the most frequent symptom of an osteitis which may attack the greater part of the skeleton, the long bones, and especially the tibia, being the most commonly affected. The osteitis is definitely caused by frambœsia, and usually begins either during or shortly after the frambœsial eruption. Patients suffering from the osteitis are refractory to inoculation with frambœsia; in the one case in which the onset of the osteitis was observed, at the sixth month of the frambœsial eruption, both the bony and cutaneous lesions yielded to treatment by novarsenobenzol. The author makes some interesting observations on the geographical distribution of the disease; commonest on the Gold and Ivory Coasts, it occurs throughout tropical Africa, and has been found in the West Indies, Central and South America, China, Sumatra, Malay, and New Guinea. No case has been reported from Europe, but the author believes that some cases labelled leontiasis ossea would have been called "goundou" had they occurred in the tropics; he concludes that true leontiasis is due to hereditary syphilis, and that the *Treponema pallidum* and the *Treponema pertenue*, the causative organism of yaws, are able to produce very similar lesions.

Major Botreau-Roussel's work is profusely illustrated and forms a notable contribution to the study of an important tropical disease.

[1] THE LANCET, 1900, i., 20.

[2] Frambœsial Osteitis, or "Goundou." By Major Botreau-Roussel. Paris: Masson et Cie. 1925. Pp. 129.

INTERNATIONALISM AND MEDICINE.

WE have received from Dr. A. A. Warden, of Paris, an interesting communication under this title, in which he points to the recent visit to Europe of our American colleagues as a proof of the spread of the feeling that medicine is an international affair. The view has been expressed so often and so fully in these columns that we need not reproduce Dr. Warden's words, while we agree with him that medicine in its national and international relations occupies no different place to that occupied by science, literature, and art. All developments of these immediately add to the common stock of wisdom of the world in a degree proportionate to the dissemination of new work. But Dr. Warden singles out medicine as the great activity which might promote the cause of international peace if (and it is a large "if") all those who practise it should refuse to have anything to do with the conduct of a war. There is both truth and ingenuity in his argument that the services of medicine, while they alleviate the horrors of war, may also prolong those horrors by maintaining a continuous supply of fighting men and, through the prevention of epidemics, a continuous supply also of those who minister to the forces. This position has been pointed out before, but we doubt if it would act as a common inducement to medical men all over the world not to place their services at the disposal of their countries. Dr. Warden suggests that this is a question which might well be submitted to an international gathering of medical men, and brings the idea forward in order to ascertain how far it receives support in this country.

INOCULATION AGAINST CATTLE DISEASE IN SOUTH AFRICA.

Mr. L. E. W. Bevan, M.R.C.V.S., has been doing good work in Southern Rhodesia, and in reports [1] to the Secretary to the Minister of Agriculture and Lands, Salisbury, he gives an account of his findings. He has devised a special vaccine for use against infectious abortion of cattle which he names "devitalised vaccine." His aim has been to retain in the vaccine only those elements required to call out in the treated animal the maximum quantity of specific antibodies. The particular virtue claimed for the vaccine is that it can be applied without risk during pregnancy, so that the resistance to infection is maintained until the danger of infection has gone by. Reports received from cattle owners who have used the vaccine are encouraging, and from hundreds of careful experiments and observations at the laboratory the efficacy of the vaccine has been verified. Mr. Bevan thinks that the best plan of campaign in dealing with an outbreak of infectious abortion is to seek out and eliminate the source of infection, to disinfect cow-sheds, kraals, and infected watering-places, to get rid of non-breeding cows and those constantly returning to the bull, to test all bulls and remove reactors, and to vaccinate all cows in danger of becoming infected. He regards it as essential to continue this policy over a series of years. Infectious abortion of cattle merits drastic treatment, both on its own account and because of its apparent infectivity to man. Out of 30 cases of Malta fever admitted to Rhodesian hospitals at least one-half came from areas where goat's milk had not been consumed but where infectious abortion existed at the time among the cattle. Mr. Bevan holds that the Rhodesian strain of *B. abortus* may be closely related to *M. melitensis*. In dealing with trypanosomiasis in cattle

[1] Southern Rhodesia: Report of the Director of Veterinary Research, 1924. Inoculation of Cattle Against Red-water and Gall Sickness, Bulletin No. 536.

he has experimented with a preparation containing antimony and arsenic injected subcutaneously, a procedure which has in many cases enabled the owners of fly-struck cattle to carry on farming operations which they feared would have to be abandoned. Successful inoculation has also been practised against red-water and gall-sickness which are responsible for enormous losses among cattle. Protection of imported stock from infection by ticks until the immunity resulting from inoculation has time to develop is an important measure. Mr. Bevan has had the opportunity of dealing with disease on a far larger scale than veterinarians have in these isles, and has made good use of his opportunities.

NEW DRUGS FROM SOUTH AMERICA.

THE recent Mulford Biological Exploration of the Amazon basin, under the direction of Dr. H. H. Rusby, resulted in bringing back to the United States much interesting material, and amongst this were at least two drugs which, it is predicted, may have some therapeutic application. Caapi, the first of these, is the root and rhizome of a woody vine, *Banisteria caapi*, which grows in the central portion of the Amazon basin. The plant belongs to the *Malpighiaceæ*, a large family of tropical woody climbers, but no other member of this family is known to possess similar medicinal properties. The use of this drug by the natives in Colombia was first described by Humboldt and Spruce, and, later, two German explorers, Weiss and Schmidt, made extensive observations on its use and obtained photographs of natives under its influence, but their researches were apparently never published. Dr. Rusby heard of the plant from these workers, and with the aid of his photographer, Mr. Gordon MacCreagh, obtained material for study. In another part of South America Dr. O. E. White discovered the drug in use under the name of "ayahasco." In Bolivia it appears that caapi is used mainly as a stimulating beverage, similar to tea and coffee; but in Colombia the drug is used for the specific purpose of giving courage and fortitude in facing danger and enduring suffering. Dr. Rusby has given an account of the effect of this drug, from which the following passage is taken[1]:—

"Within a very short time after drinking the decoction, there is a powerful effect on the nervous system and on the circulation. The cutaneous circulation is checked, as manifested by a strong pallor. The subject is restless, and occupies a standing position. There is an intensely anxious or fixed expression to the countenance, and there are convulsive tremors. This condition lasts but a few minutes and is followed by a violent reaction, in which the blood rushes to the surface and the man becomes highly or even violently active. Fear, and even prudence, is entirely destroyed and he becomes extremely active muscularly. He is ready to fight anything and everybody, or any number of enemies and suffering is disregarded. He rushes about and seeks an enemy with utmost eagerness. This condition lasts for hours, and is followed by more or less exhaustion and somnolence. The nature of this somnolence is in doubt. Some accounts indicate it is a narcotic effect and that there are unnatural dreams and visions. Others indicate that it is the natural reaction following weariness or exhaustion."

A chemical examination of caapi has shown that it contains three, and possibly four, alkaloids, one of which is closely related to morphine. Three alkaloids have been separated with great difficulty—a phenolic alkaloid, a non-phenolic alkaloid forming a hydrochloride which is only soluble with difficulty, and the third, a non-phenolic alkaloid forming a more readily soluble hydrochloride.

The other drug which appears to be of pharmacological interest is extracted by the Indians of Central Bolivia by boiling portions of a plant known as miré (pronounced mee-ray). The plant is said to be a member of the nightshade family, and is employed by the natives as a muscular paralysant and remedy for cutaneous parasites. In full doses the natives report that it produces paralysis of all the voluntary muscles without any disturbance of sensation or intellect, while a profuse perspiration of the cold type is produced, and this perspiration is said to be capable of destroying all cutaneous parasites. Animal experiments carried out by Dr. T. S. Githens[2] indicate that miré causes paralysis of the voluntary muscles by an action on the spinal cord, a stimulation of the peripheral motor apparatus, resulting in twitching of the muscles, a stimulation of the salivary and sweat mechanisms and sometimes of peristalsis, while the heart is slowed, probably from vagal stimulation.

[1] Jour. Amer. Pharm. Assoc., February, 1924, p. 98.

BRITISH MEDICAL ASSOCIATION: COMING EVENTS.

DURING the present month two important events in the life of the Association will take place. The first is the opening, on Monday, July 13th, of the Association's new premises, designed by Sir Edwin Lutyens, R.A., in Tavistock-square, London. The ceremony will be performed by H.M. the King, who will be accompanied by H.M. the Queen, and the Archbishop of Canterbury will dedicate and open the Memorial Gates erected by the Association as a tribute to the 574 members who fell in the Great War. The Reception Committee has not found it possible to get into touch with the relatives of all these deceased members and would, we understand, welcome application for tickets from any who have not been reached. The gathering will include delegates of medical bodies not only from Great Britain but from the dominions, colonies, and from foreign countries. The second event is the ninety-third annual meeting of the Association, to be held in Bath from Tuesday, July 21st, to Friday, the 24th, under the presidency of Dr. Frederick George Thomson, physician to the Royal United Hospital. The presidential address will be given on Tuesday evening, and the annual exhibition of surgical appliances, foods, drugs, and books will be officially opened on the same day. The various scientific sections meet during the forenoons of Wednesday, Thursday, and Friday, July 22nd–24th. The annual dinner will take place on Thursday, July 23rd; and the popular lecture will be delivered by Sir W. H. Bragg, F.R.S., on Friday, July 24th, at 8 P.M. The annual Representative Meeting will begin on Friday, July 17th, and be continued on the three following week-days. The statutory annual general meeting will be held on July 21st, at 2 P.M., and the conference of secretaries on Wednesday, July 22nd, on the evening of which day the secretaries' dinner will take place. Saturday, July 25th, will be given up to excursions to places of interest in the neighbourhood. The honorary local general secretary for the annual meeting is Mr. W. G. Mumford, F.R.C.S., to be addressed at the B.M.A. Committee Rooms, Bath, where he will be assisted by Dr. R. G. Gordon.

THE ROYAL MEDICAL BENEVOLENT FUND GUILD.

THE scanty support given to the Royal Medical Benevolent Fund is a grave blot on the escutcheon of the medical profession. In order to assist this most deserving charity a number of ladies formed themselves in 1909 into a Guild for the purpose of soliciting additional subscriptions and assisting the work of the fund by personal service. The fifteenth annual report of the Guild records a successful year of work. So rapidly are the activities growing that it has been found necessary to rent a permanent office at 58, Great Marlborough-street. The established branches are in a satisfactory condition and money has been raised by dances, bridge parties, American teas, bazaars, and other special efforts. There are, however, many provincial towns where no branch has yet been formed and it is most desirable that the work should be extended to every part of the country. One of the most engaging activities of the Guild is the "Father Christmas branch," which sends Christmas gifts

[2] Loc. cit., p. 102.

to the sad cases on its books, sweets and books for the children, and money for the elderly. It is at the festive season that the burden of a hard life becomes more bitter, and a small remembrance such as the Guild is able to provide brings a feeling of joy quite disproportionate to the value of the gift. The heavy rentals demanded for single rooms as well as the general increase in cost of living and crowding of the labour market has reduced many of these people to real starvation; their appeals are almost always for work, but modern conditions afford little hope of livelihood to the untrained or partially-trained and elderly worker. The Guild allows money grants to the aged, the sick, and for special emergencies, such as removal, purchase of surgical appliances, spectacles or dentures, holidays, and the acquisition of some means of livelihood such as a typewriter. The fundamental principle underlying the work is to help people to help themselves. Scarcely more pathetic, but still graver from the point of view of the community, are the young children whose education cannot be completed owing to the death of their father. Much valuable service would be lost to the State if the Guild were not able to save these children from the lives of uncongenial and unproductive labour into which poverty would force them. The attention of practitioners and their wives is drawn to the value of the work being done by this Guild. The Secretary is Miss Thomson, 60, South Molton-street, W. 1.

THE SECRETARYSHIP OF THE ROYAL SOCIETY OF MEDICINE.

AT its last meeting the Council of the Royal Society of Medicine selected a successor to Sir John MacAlister from a large number of applicants, the choice falling upon Mr. Geoffrey R. Edwards, B.A. Camb. Mr. Edwards was educated at St. Paul's School and St. John's College, Cambridge. He studied in Germany in order to qualify for the Woods and Forests Department of the Indian Civil Service, and continued this work in India. On his return to this country he joined the Royal Air Force as a pilot, was wounded, and had to alight in enemy country, entailing an imprisonment of 14 months in Germany. Subsequently, Mr. Edwards served on the Repatriation Commission in Germany and on the Inter-Allied Aeronautical Commission of Control. When finally demobilised he obtained the appointment of assistant secretary to the National Physical Laboratory, Teddington, where he had considerable experience in library and editorial work, in organisation, and in receiving. Mr. Edwards has travelled in most European countries and speaks French and German. He takes up the duties for which he is so well qualified on Sept. 1st next, and we wish him well in a position of great importance and interest. We are glad to learn that the Society has decided to mark Sir John MacAlister's retirement by appealing for funds to raise a memorial to his great work for medicine over a period of 38 years. Fellows of the Society will be glad to have the opportunity of constituting a permanent memorial of the man to whom the very existence of the Society is chiefly due. The proposal is to ask Sir John MacAlister to sit for his portrait, to be rendered in oil or stone.

THE JOHNSTON-LAVIS GEOPHYSICAL BEQUEST.

THE late Dr. H. J. Johnston-Lavis, who was both a medical man and a distinguished geologist, bequeathed to University College, London, his geophysical collection of some 20,000 specimens and a remarkable library of books and pictures relating to volcanic phenomena. These have been housed at 134, Gower-street, a few doors from University College, where the collection was formally opened on June 25th by Sir Henry Miers, F.R.S., Vice-Chancellor of the University of Manchester. Sir John Rose Bradford presided, and among those present was Dr. de Lavis-Trafford, the son of the donor, who is qualified in medicine in France. Johnston-Lavis, who was descended from a Huguenot family, "de Lévis," received his primary education at the Grammar School, Iver, Bucks. While there, the story goes, a school-fellow threw a stone at him. Young Johnston-Lavis, although in pain, examined the stone with curiosity, and further investigation showed the missile to be a fossil echinoderm. This event stimulated his interest in geology, and the stone formed the first specimen in his collection. In 1873 he became a student at University College, studied medicine at St. Mary's Hospital, and qualified with the M.R.C.S. in 1878. While a medical student all his leisure was devoted to geological studies, and at 18 he joined the Geologists' Association, in the following year became a member of the Geological Society, and at the age of 20 published his first geological paper. The value of geology to medicine was shown in his essay, which gained the Parkin Prize of the Royal College of Physicians of Edinburgh in 1914. This discussed the physics and chemistry of volcanic eruption and the physical effects of eruptions on human beings and animals. For many years Johnston-Lavis was Professor of Vulcanology in the Royal University of Naples and, as Prof. Miers pointed out, he was the very embodiment of the scientific spirit in all the work which he did. The gift forms a permanent expression of the donor's affection for the College and the University.

BENJAMIN BROADBENT.

Benjamin Broadbent, who died on June 25th at the age of 75, was a younger brother of the late Sir William Broadbent and, like him, a forceful person. He will be remembered as a pioneer in child welfare work. For many years chairman of the Huddersfield Health Committee, he entered with enthusiasm into the efforts of the medical officer of health, Dr. S. G. Moore, to save the lives of infants dying from preventable causes in the borough. In 1904 Mr. Broadbent accepted the civic chair for the definite reason that he believed it would give him greater scope for combating infant mortality. He offered a gift of £1, secured by a promissory note, to every baby born in Longwood (where his woollen mills were situated) during his year of office, who was still alive at the end of 12 months, the object being to ascertain where births had taken place, so that they might be followed up. During the year 112 infants were born in that ward, of whom only four failed to claim their birthday present; at the end of ten years 98 were still alive, and only seven were known to have died. The first promissory note was taken to the house by Miss Broadbent, and thus began a system of voluntary home visiting. In the following year the Huddersfield and District Public Health Union was instituted, with Mr. Broadbent as president. This Union, which secured the help of more than 100 volunteers, worked in close coöperation with the Public Health Department. A fee of 1s. offered for any notification of birth received within two days was largely successful, but failed in just those cases where it was most needed, and it was chiefly due to the representations made by Mr. Broadbent and Dr. Moore that in 1906 compulsory notification of births was introduced by Act of Parliament. A fundamental aim of Mr. Broadbent's work for child welfare was to keep mother and child together in the home, and to give help to both. His influence had much weight in the establishment of the National Association for the Prevention of Infant Mortality, for which he drafted the constitution. Again, it was on Mr. Broadbent's suggestion that, at a Mansion House Conference in 1917, it was decided to form a small committee to act in conjunction with Lord Rhondda to go into the question of a Ministry of Health. As recently as July, 1924, two striking articles appeared in the *Times* over the signature of Benjamin Broadbent, showing the results of a careful personal investigation into the "Ten Best Towns" for infant life. He was one of the speakers appointed to take part in the International Summer School to be held at Geneva in August of this year, when his subject was to have been Begin-

nings of Infant Welfare in Great Britain. Mr. Broadbent had the satisfaction, not granted to all pioneers, of seeing the fruits of his labour.

DENICOTINISED TOBACCO.

A NUMBER of people appear to be specially sensitive to the toxic effects of nicotine and its associated alkaloids contained in tobacco. Some of them are deterred from smoking at all; more of them smoke in excess of what they know to be good for their physical and mental efficiency. Dealers have endeavoured to meet the needs of these people by supplying tobacco from which the nicotine has been removed, in whole or in part. We published not long ago, at the request of a business firm, some analyses of the nicotine-content of tobacco treated with a view to reducing the percentage of nicotine. While the flavour and smoking quality remained, as far as we could ascertain, unchanged, it was possible to show that denicotinisation had taken place to the extent of 10 to 20 per cent. It must not, however, be assumed that every so-called "nicotine-free" tobacco placed on the market is in fact such, for a communication has recently been made[1] by Dr. L. Frank, scientific member of the Chief Health Office in Berlin, showing that the Chemical Institute attached to the Health Office was unable to confirm the withdrawal of nicotine from a number of tobacco samples so described. In two samples, in fact, the percentage of nicotine was higher in the treated than in the ordinary variety of tobacco as obtained from the same firm before treatment. The increase has a possible explanation in the greater dryness of the treated tobacco. The registered process of denicotinisation in this case appears to consist in the exposure of the tobacco, whether cigars or cigarettes, for a long time to a moist atmosphere, succeeded by a rapid rise of temperature to 150° C. in an exhaust chamber. Whether the unsuccess in the samples examined was to be ascribed to the process itself or to deficient technique in carrying it out Dr. Frank does not pretend to decide, but he does warn physicians not to recommend to their patients the use of cigars and cigarettes alleged to be denicotinised, without further evidence than the maker's assurance.

A RECEPTION will be held at the Royal College of Surgeons of England, Lincoln's Inn-fields, on Monday evening, July 13th, in connexion with the Convention of English-speaking Ophthalmological Societies. Fellows and Members of the College wishing to attend should apply to the Secretary, Mr. S. Forrest Cowell, at the College for cards of invitation before July 10th. The Convention meets from July 14th to July 16th, under the Presidency of Mr. Treacher Collins, Mr. C. B. Goulden (79, Portland-place, W.) being the General Secretary.

THE committee of the Torbay Hospital has received the sum of £100,000 from Mrs. Ella M. Rowcroft for the erection of the proposed hospital and chapel at Hengreave House. The site had already been purchased and this munificent gift will cover the whole cost of building, leaving the committee to raise only the sums for furnishing and equipment. Subscriptions have already been received and the donor hopes that the required amount may be completed before the hospital is opened, and also that there may be a sufficient surplus to form a substantial foundation for an endowment fund. The only conditions of the gift are that the chapel shall be erected in accordance with a plan and specification to be approved by the donor and shall contain a special window chosen by her, and that no vivisection or cognate treatment shall be permitted on the premises. An additional £6500 are provided to endow the stipend of the chaplain. A special effort is to be made to raise a further sum of £26,000 for endowment. The work is to be put in hand without delay.

[1] Deutsch. med. Wochenschr., 1925, i., 484.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXIX.—THE TREATMENT OF ABDOMINAL ADHESIONS.

THE scope of this paper is limited to a consideration of abdominal adhesions secondary to inflammatory processes or to operation, and does not include the various recognised types of colonic adhesions whose sites and appearances are constant—e.g., Jackson's membrane.

Inflammatory Adhesions.

In the first place, we must recognise that the formation of adhesions following inflammation of, or operation on, abdominal organs is a natural and life-saving process. It is only when these adhesions interfere with the normal functions that the patient seeks advice and treatment.

Adhesions which result from inflammation may cause severe symptoms of acute or subacute obstruction, and these are more liable to occur following a lesion in the lower abdomen. While in some patients symptoms supervene shortly after the acute attack, others may enjoy many years of unimpaired health before symptoms supervene. Cases are frequently seen in which the signs strongly suggest cancer of the colon and in which it is difficult to estimate the true significance of a history of "a bad attack of inflammation of the bowels" 15 to 20 years previously. Tuberculous adenitis of the mesentery is not an infrequent cause of acute or subacute obstruction, either by the formation of bands stretching across the abdominal cavity from the infected gland, or by actual attachment of the bowel to the gland. In cases of the latter type the prognosis ought to be guarded, because frequently the gland is acutely inflamed as the result of secondary infection from the bowel, and its close relationship to the large mesenteric vessels makes the development of thrombosis, embolism, or generalised infection fairly probable. The development of inflammatory adhesions tends to mask the signs and symptoms of the original lesion. For example, when a gastric or duodenal ulcer has become adherent to neighbouring organs the regularity of the appearance and disappearance of the pain in relation to the taking of food becomes less noticeable and is replaced by a continual discomfort or dragging pain. The seasonal remissions from pain also become incomplete or altogether absent.

Traumatic Adhesions.

After every abdominal operation a certain degree of peritoneal adhesions necessarily occurs. In the majority of cases no signs or symptoms result. In other cases discomfort develops and the surgeon must carefully consider whether at the primary operation an important lesion had been overlooked or has subsequently developed—e.g., a duodenal ulcer or gall-stones in a case on which appendicectomy has been performed—or whether in a neurasthenic patient operation has been performed on insufficient evidence owing to exaggeration of the original symptoms.

The "Adhesions Diathesis."

In the treatment of adhesions there is no difference between those of inflammatory or traumatic origin except, of course, that the former call for more urgent treatment of the primary focus, increase the difficulties at operation, and may cause a more prolonged convalescence. A great deal of experimental work has been done to try to elucidate the causes of post-operative adhesions and to devise methods for their prevention, but progress has been slow and unsatisfactory. Sepsis of low virulence, excessive trauma, and incomplete hæmostasis are without doubt

important predisposing factors. In certain other cases an "adhesions diathesis" is said to be the cause. It is well known that certain individuals may suffer from acute and widespread peritonitis, that the abdomen may be opened, swabbed, packed, and drained without the development of any subsequent trouble from adhesions, while a slight and strictly limited operation in other cases may lead to prolonged crippling and suffering.

Points of Technique.

Strict attention to the established rules of surgical technique will greatly reduce the number of cases of "adhesions diathesis." Injury to the visceral and parietal peritoneum by mechanical or chemical means occurs all too easily, and in the subsequent repair harmful adhesions may result. It is now generally believed that the use of iodine or picric acid in the preparation of the skin is not conducive to the formation of adhesions if ordinary care be taken to protect the intestines from escaping outside the abdominal cavity. The use of strong disinfectants for lavage or for the moistening of packs is, however, to be strongly condemned. Undue exposure of the intestines to the air causes an injurious drying of the peritoneum and predisposes to the development of adhesions. Opinion is divided as to whether packs ought to be used dry or moistened in saline. In experimental work on guinea-pigs no marked difference between the two methods was noted, but the observations were not conclusive because in neither group did extensive adhesions develop. The use of rubber dam or jaconet to protect the intestines from the gauze is theoretically of advantage but mechanically is difficult to apply. All raw or bruised surfaces should be carefully and systematically covered by normal peritoneum whenever possible. The use of detached pieces of omentum to cover denuded surfaces is of doubtful value, as Mann[1] has shown that they quickly become converted into fibrous tissue with all its tendency to contraction and adhesion. The graft also shows very poor resistance to septic invasion. The use of undetached great omentum, the lesser omentum or ligamentum teres to cover raw surfaces is more likely to be of permanent benefit, but care must be taken that no undue strain is put upon these structures, or trouble will supervene, particularly after an operation in the lower abdomen, where a short omentum has been pulled down to protect the posterior surface of the wound.

Introduction of fluids such as liquid paraffin, vaseline, and gum acacia in gelatin into the abdominal cavity has not proved of practical value in the prevention of adhesions, nor has the introduction of oxygen after closure of the wound. In closing the abdomen care should be taken to evert the cut edges of the posterior rectus sheath and parietal peritoneum, thereby minimising the raw surface to which bowel may become adherent. Attempts have been made to overcome the harmful effects of adhesions by the early induction of peristalsis. Pituitary extract, eserine, and hormotone by hypodermic injection, and aperients injected into the bowel at operation or given by mouth soon after operation have been advocated. It is doubtful, however, if any of these methods can have a direct action on the bowel, which remains temporarily paralysed as the result of handling for about 24 hours; by this time the "glueing" together of coils of intestines by lymph will have laid the foundation of fibrous and permanent adhesions. All that can result is a drawing out of the fine adhesions before permanent deformity of the gut has occurred.

Relief of Post-Operative Pain and Discomfort.

Regulation of the bowels by suitable diet, regular habits, aided by mild non-irritating aperients, such as liquid paraffin, and massage, together with the assurance that the pains and aches are only temporary, will lead to a cure in many cases. In more resistant cases the use of heat in the form of hot fomentations or of "radiant heat" will be found to give considerable relief. Some patients complain of pain and dragging in the wound itself, and it is frequently difficult to determine whether the "fons et origo mali" is in the abdominal wall or is the pull of adherent intestine on its posterior aspect. The distinction may sometimes be made by observing whether or no the injection of novocaine into the abdominal wall gives immediate relief. If the point of pain or tenderness is well localised in the wound the use of a counter irritant—e.g., emplast. epispasticus or the injection of 20 to 40 c.cm. of normal saline into the abdominal wall—will be found to be very beneficial in some cases.

Operative Measures.—Should symptoms persist, and particularly if signs of acute obstruction develop, operation is called for and should on no account be postponed, in spite of the natural objection to a second operation. Very extensive interference with the blood-supply of the small intestine may rapidly and insidiously take place in a patient suffering from abdominal adhesions. Repeated attacks of vomiting, a tongue tending to be dry and coated, with perhaps some slight distension of the abdomen, are enough to justify exploration without waiting for other text-book symptoms of obstruction. A large incision should be made extending well beyond the limits of the scar of the previous operation in order to expose an area of peritoneum which has not been injured previously and to which it is unlikely the abdominal organs have become adherent. The opening into the peritoneal cavity should be made slowly under direct vision, unobscured by blood, and with a sharp knife in preference to scissors. By using this method injury to a knuckle of bowel which may, perchance, be adherent will be recognised before its lumen has been opened and another area further from the original wound selected. After the peritoneal cavity has been opened and the original wound reached, the cutting must be done with great care as a segment of intestine is frequently adherent to the posterior surface. In some cases a narrow band will be found to be the cause of the trouble and its ligature and division is all that is necessary. The more difficult cases, however, are those which show widespread adhesions, and it is often difficult to determine which of these is giving rise to trouble. Extensive "glueing" of the segments of the bowel does not cause symptoms, and one must look for the sharp angulation or narrowing which is the responsible factor. A loop of bowel showing dilatation and hypertrophy may be of great help in guiding one to the proper quarter. In the separation of adhesions I would again emphasise the advantage of a sharp knife used cautiously in place of scissors or any form of blunt dissector. All raw surfaces must be covered as well as possible and all bleeding stopped. Accidental punctures into the intestine or wounds involving its serous and muscular coats must be carefully closed, while in cases of extensive damage resection of the segment may be the quickest and most efficient method of treatment. Drainage should not be employed unless there has been persistent and uncontrollable oozing of blood or extensive soiling of the peritoneal cavity, as the presence of a foreign body predisposes to the formation of further adhesions.

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[1] Mann: Surg. Clin. of N. Amer., 1921, i.

UNIVERSITY OF BRISTOL.—The Markham Skerritt Memorial Prize has been awarded to Macdonald Critchley, M.D. Bristol. This prize was founded in memory of the late Dr. Markham Skerritt and is awarded every three years to that medical member of the University of Bristol who, in the opinion of the board of the medical faculty, has in the previous three years published the best original work in any branch of medical science. During 1924 Dr. Critchley has published the following papers: The Parkinsonian Syndrome (*Bristol Med.-Chir. Jour.*), Present Position of Parathyroid Therapy (*Pract.*), The Calcium Content of the Cerebro-spinal Fluid (with O'Flynn) (*Brain*).

Special Articles.

THE ANOPHELES MOSQUITO IN ENGLAND.

BY A. W. ALCOCK, C.I.E., F.R.S.,
LT.-COL. I.M.S. (RETD.); LATE PROFESSOR OF MEDICAL ZOOLOGY IN THE UNIVERSITY OF LONDON.

DIFFUSION of knowledge of the fact that the malaria parasite undergoes in the anopheles mosquito those necessary stages of development that fit it for passage from one human being to another has not been accompanied by a corresponding understanding of the necessary circumstances in which this potential danger from the insect becomes realised in a general onset of malarial fever.

Imagining that both the anopheles and considerable numbers of relapsing malaria convalescents are recent introductions into these islands, and that the malefic powers of the insect are unconditioned, the public seems quite ready to believe the alarming prophecy that a general outbreak of malaria is impending in this country unless immediate steps be taken to exterminate the anopheles. It is necessary, therefore, that the public should understand that anopheles mosquitoes are as native to this country as the sparrows and the starlings; that malarial fever—known to our forefathers as "fever and ague"—is also native here, but from having been in former times extremely common is now almost extinct as a native disease, notwithstanding the constant re-introduction of malaria parasites in the blood of convalescents annually returning from India and other parts of the tropical dominions; and that this gradual process of extinguishing malaria was carried well the right side of the public safety-point without any attempts at exterminating the anopheles mosquitoes, and, indeed, long before the malaria parasite and its vital associations with a mosquito of any sort had been discovered. It is advisable, in short, that the public should be taught as a most conspicuous illustration of the value of sanitation, how, in a country that possesses an efficient sanitary administration, a creature so potentially dangerous but so difficult to exterminate as the anopheles mosquito can be permitted to exist, *in its proper natural stations*, without menace to the public health.

Native Village and Modern City.

That the nature of the sanitary environment is the main factor in determining the influence of a potentially dangerous species of anopheles upon the public health is easiest understood by comparing an unsophisticated native village with a modern Anglicised city—both situated in a malarious tropical province—by comparing, for instance, an ordinary village in Lower Bengal with the European quarter of Calcutta. The native village, more or less obstructed by jungly growth, stands on soil that for much of the year is waterlogged; the surface of the ground is broken, so that, as there is no drainage, every chance hollow may be a temporary nursery of anopheles during the rainy season; moreover, there also are innumerable permanent breeding-grounds. Above all, the clusters of thatched, cow-dung-plastered huts and *baris*—damp, dark, ill-ventilated—in which the most part of the people live, are ideal haunts and permanent harbourage for the adult anopheles. In such conditions the villagers and the anopheles live together in close intimacy, and the swiftly succeeding swarms of anopheles must always be sucking the blood of infected human beings and returning the infection indiscriminately to the village population.

The state of Calcutta at the end of the eighteenth century, as described by Busteed, seems to have been almost worse than that of a Bengal village. The houses of the Europeans may have been large, but they had not glazed windows, and the entire settlement "at this time stood in what was little better than an undrained swamp, in the immediate vicinity of a malarious jungle . . . and the ditch surrounding it was . . . an open cloaca." Even into the early part of the nineteenth century the place was known as a white man's grave. But before the end of the nineteenth century the European quarter of Calcutta, so far as the essentials of sanitation are concerned, had attained the standards of a high civilisation: insanitary native *bustees* had been cleared away, ways and spaces were well kept, surface drainage was sufficient, and the drainage of the neighbouring *maidan* was magnificent. The tanks, or reservoirs, which in early days had been the water-supply of the city, still remained as more or less ornamental relics, and still served as breeding-grounds for plenty of anopheles mosquitoes, and among them the dangerous *Anopheles funestus*; but dry and well-ventilated rooms are not attractive to anopheles, and these insects did not make their way into well-constructed houses, so that good authorities doubted whether primary cases of malarial fever *originated* any longer in the European quarter of Calcutta. We must consider what is likely to happen to such insects as still might get into rooms so unsuitable to their taste. Are they as likely to bite human beings—or to light upon an infected human being—as they would be in a native village? Are they likely to remain in a situation so inhospitable long enough to develop an infection (10 to 20 days) if it were acquired? Such a favouring concurrence of events is likely to happen only where large numbers of anopheles and large numbers of infected human beings exist for a considerable time in constant association in an environment that suits the insect.

Story of Malaria in England.

To estimate present-day possibilities of danger from our native British anopheles we have to consider the history of malaria in England in the light of the foregoing comparison. The result will be to show that in the old pre-sanitary days, when the state even of cities like London was almost as bad as that of an Indian village, "fever and ague" was extremely common here, and that with the progress of sanitation it disappeared except as an insignificant localism—and all in entire ignorance and unconcern of the anopheles mosquito.

It is doubtful whether it is now generally realised how common malaria was in this country—and even in London—in the days of our forefathers. The bill of mortality for the London area for the year 1665 included 5257 deaths from "fever and ague" in a population that must have been less than one-tenth of what it is now; and if it be objected that this was the year of the Great Plague, when deaths from that disease might have been deliberately concealed under a less fearful name, it may be replied, on the other hand, that the spring and summer of that year were seasons of a phenomenal drought that would have played havoc with mosquitoes. But there is no need to search for inaccessible records; books familiar to every educated Englishman—the "Canterbury Tales," the plays of Shakespeare, the diaries of Pepys and of Evelyn, and Swift's "Journal to Stella"—give us plenty of information on the subject. An evil that comes most readily to Chaucer's imagination in "The Nun Priest's Tale" is a "fevere terciane, or an agu, that may be your bane." What with direct speech and metaphor there are more than a dozen striking references to ague and quotidian shakings in Shakespeare's most familiar plays. Pepys's business was several times hindered by "my lord's" ague, and one of his merry parties was interrupted by the ague-fit of a lady guest. Evelyn has a good deal to say about Charles the Second's ague; he tells of one dangerous attack when the king insisted on having the new remedy "quinquina": he describes his own little son's death at Deptford from "a quartan ague"; and he gives a full account of the *popular* cure—bathing the legs in milk as hot as could be borne and drinking

carduus posset—by which he cut short one of his own attacks of ague. Swift, writing in 1711 from Chelsea, tells Stella that "people here are troubled with ague . . . which is a very common disease here," even Queen Anne and Lady Masham not escaping; and he chuckles over his pun on the fellow who "pretends to cure agues, and has set out a sign, and spells it 'egoes' . . . but I was sure [the cure] was not by a *spell*."

Change in Sanitary Environment.

Again it is doubtful whether a generation familiarised with sanitary conventions from its cradle realises what our forefathers endured in consequence of their ignorance and indifference in matters of sanitation. What London itself was like in the latter part of the seventeenth century—and there is no good reason for supposing that it was worse than other British towns—is tersely described in Mr. W. G. Bell's recently published book on "The Great Plague in London in 1665"; the description well suffices to explain the prevalence of fever and ague at that time. In the absence of drainage there must have been a profusion of temporary breeding-places for the anopheles among the crooked, obstructed, unpaved ways, and domestic wells and ill-kept streams must have provided permanent breeding-grounds in plenty; while dark, damp, ill-ventilated rooms, in houses constructed largely of wood and confined by accumulations of garbage, must have been attractive harbours for the adult anopheles.

When the sanitary environment of the present time is contrasted with this domestic and civic indifference of those pre-sanitary days it is easy to understand how an intimacy between humanity and anophelinity has been broken, and how, in consequence, malaria has disappeared from this country, except here and there within the limits of a few scattered and rather "wild" areas whence a case of indigenous malaria is occasionally reported as an interesting curiosity. With this conquest over malaria there has not been a concurrent subjugation of the anopheles. Those now innocuous insects may not perhaps exist to-day in the City of London, but all the three British species—*maculipennis*, *bifurcatus*, and *plumbeus*, all of them susceptible to malarial infection—exist in fair numbers within the residential area around London, and at least two of them exist in great numbers in certain populous country districts.

Contributory Mitigating Influences.

Before considering exactly how a sanitary environment has managed, quite accidentally, to separate anopheles from mankind in this country, certain other factors that must have helped to mitigate the risk from the insect as this separation progressed must be taken into account.

First there is the limited infectivity of the insect in our variable climate. Whatever may happen under conditions of temperature and humidity that can be controlled in the laboratory, it is certain that the proportion of insects that develop an infection when left exposed to natural influences after feeding on a suitable malaria patient is in this country very inconstant, and may even be as low as 3·3 per cent. of a considerable batch. It appears, indeed, that if it could be imagined desirable to attempt to make our British anopheles generally infective under the sanitary regimen of the present day, the attempt could get fairly floated only in a summer having fairly long spells of weather that is hot without also being dry. But, as any ordinary proposition, it is obvious that as the numbers of anopheles diminish with the disappearance of temporary breeding-places by drainage, this variable infectivity of the insect in a variable climate would tell in reducing malarial fever.

Then there is the protection afforded by domestic animals. Roubaud, in France, attributes the absence of malaria in parts of that country where the anopheles are abundant (*anophélisme sans paludisme*) to the increase of domestic animals, particularly cattle, and more particularly stalled cattle. He has gone so far as to assert that in some such districts the anopheles have become functionally and even structurally adapted to cattle (*zoophile*) and have developed a correlated aversion to man. There is, however, no general concord of evidence that the insect prefers the blood of cattle to that of horses, or pigs, or rabbits, or man, though there would perhaps be more general agreement that it prefers a cattle-shed or a stable even when empty to a well-constructed house even when it is inhabited.

The Two Outstanding Factors in Prevention.

From this last promontory can be seen the two outstanding items of sanitary progress that most seem to have worked together in ridding this country of malaria and preventing its reintroduction in spite of the abundance of susceptible anopheles—namely, drainage and generally improved housing. The importance of drainage in restricting breeding-places and drying the soil is too well understood to require further comment. But the equal importance of dry, light, airy houses seems to have been realised only by Dr. C. W. Daniels, Colonel S. P. James, and a few others. And yet there are some facts of common observation that suggest the influence of the house. There is the significant fact that in certain Indian cantonments—and these not notoriously malarious—there may be (or once was to be) found some one particularly malarious house having the opprobrious name of "Fever Hall." Colonel James, too, has emphasised the existence in the Medway estuary of little nests of native malaria focused in a particular street, or a particular house where the anopheles make themselves at home. Conversely, there are places not a few, in the residential area around London, where anopheles larvæ are to be found in any pond and adult anopheles in any cowshed or stable, though search for an anopheles in the excellent modern residence close by would be vain. Moreover, there is more than one salubrious spot within a few hours of London—once ague-stricken, but where ague is now a vague and almost obliterated tradition—in which in July 50 anopheles larvæ may be taken from a stream at one dip of a cup, and in October adult anopheles innumerable may be caught in a cowshed or a stable though none will be found in well-built and well-kept houses not a hundred yards distant. Why anopheles is so susceptible to the effects of a dry atmosphere is a biological question that does not seem to have been investigated; the absence (in all the British species) of the thick coat of scales possessed by other kinds of mosquitoes may have something to do with it. But there is nothing strange in its shunning a particular sort of house close to its haunts; there are several other kinds of blood-sucking flies that show the same discrimination.

Conclusion.

The conclusion of the whole matter is that it is chiefly an absence of a sanitary environment that makes anopheles dangerous, just as it is chiefly an absence of a sanitary environment that makes the generality of germ-carriers and germs dangerous. In places where the sanitary environment does not exist—e.g., most rural areas in the tropics—and in expeditionary camps, where the natural environment may have to be defied, anopheles is a danger that requires prompt and special attention. But in places like these islands, where an efficient sanitary service is maintained, anopheles is *not* a real danger to the public health, and as also it is *not*, like certain species of *Ochlerotatus* and like *Culex pipiens*, an ordinary nuisance—since it may be found, by search, in swarms where the inhabitants are quite ignorant of its existence—any deliberate attempts to exterminate the insect would truly be ἀνωφελής, or, rather, ἀνωφελέστατος, that is to say, most unprofitable; for such attempts would give endless annoyance to farmers, who have quite enough trouble to put up with as things are, and also would tend to shake public confidence in the established sanitary administration.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 1349.*)

MEDICAL SERVICES IN THE FACTORY.

Evidence of Sir T. M. Legge, M.D.

(App. XLII. and Q. 13515–13726.) Sir Thomas Legge, Senior Medical Inspector of Factories, gave evidence not in an official capacity but as embodying his personal views. His principal contention was that, although the worker in the factory went to his panel doctor when he became ill, there was no provision whereby the clinical knowledge of the insurance doctor was utilised in preventive work in the factory. He showed this by a chart with arrows pointing away from the factory and the workshop indicating that the workers stream from the factory to their panel doctors when they become ill. There was no return stream from the panel into the factory to try to prevent sickness claims arising there, which must ultimately fall on the National Health Insurance Funds. The duties of the factory surgeon were merely to certify fitness or disablement. The witness was sure that there was no chance of the creation of a new whole-time service of medical men as factory surgeons in this country.

> The only way . . . . in which the services of those who have the clinical experience suitable for the medical supervision can be obtained is, I believe, by some broadening of the National Health Insurance Act, so that in industrial areas certain practitioners should be given, as their panel work, the duty of keeping the industrial workers as far as possible from succumbing to illness and so becoming a charge on the insurance funds.

The witness said that he thought that both employers and trade-unionists would welcome medical supervision in the factory by a medical man for whose services they both contributed. Sir Thomas Legge urged the importance of including within the medical curriculum the relation of occupation to health, and said that much of the sickness and incapacity among the workers was preventable.

> I do not regard industrial hygiene and industrial medicine as an entity in itself, but simply as a specialised part of general medicine and surgery, from which they cannot properly be detached. Early clinical evidence of disease predisposed to, accentuated, or produced by, industry is wanted (1) for diagnosis, (2) for prevention, and (3) for treatment.

THE MINISTRY OF HEALTH INQUIRY ROOM.

(App. XLI. and Q. 13442–13514.) The clerk in charge of the inquiry room at the Ministry of Health gave evidence with regard to the number of inquiries which he received in the course of the year. The average number of personal calls is 3000 and there is a similar number of telephone calls. Surprisingly few complaints against the medical service are received, and it has been noted that with very few exceptions those persons who speak to the detriment of the insurance medical service have never been under the treatment of a panel practitioner.

NATIONAL SAILORS' AND FIREMEN'S UNION.

(App. XLIII. and Q. 13954–14058.) Mr. T. Chambers, who is in charge of the work of the union as an approved society, said that it was a registered trade-union with a membership of 58,000. The seafarer must always be a special problem within every national industrial problem. The method of collecting contributions from seamen appears from experience to be unsatisfactory. Numbers of men lose their cards or destroy them altogether, and this results in loss of credits to the Society and loss and inconvenience to the member when he is claiming benefit. The witness made suggestions for meeting this difficulty, involving the abolition of the contribution card system. Although he said that he saw grave difficulties in the way of segregating the whole body of seamen in one approved society because of the changes in employment, he thought that if this step were taken, it was essential that the Society should be under the control of its own members—in other words, the National Sailors' and Firemen's Union was quite competent to be that Society.

As to medical benefit for seamen, the witness saw no reason for any special arrangements, and said that their members who came under the ordinary machinery of the Act never made any complaint that they experienced difficulty in getting medical attention when they needed it. The Society pays less into the general medical benefit pool in respect of its members, because it gets a rebate for the periods in which seamen are abroad. This sets funds free for other benefits, and the Society give dental treatment including a contribution of about one-half towards the cost of dentures.

LOYAL ORDER OF ANCIENT SHEPHERDS.

(App. XLIV. and Q. 14059–14250.) This is a friendly society with branches called lodges. Evidence was given by Mr. John Grieve and Mr. A. J. E. Saunders. It followed in many respects evidence given by other friendly orders, including the objection to pooling surpluses, and the favouring of a limitation of additional cash benefits. The evidence contains a suggestion that the income limit for compulsory National Health Insurance should be raised from £250 to £350, on a level with the limit in the Workmen's Compensation Act, but the witnesses were unable to say that they were aware of any real demand for this.

In view of the expectation that the Society could give dental benefit out of surplus, they suggested that priority should be given in any development to the treatment of dependants.

> We are of opinion that a first step towards the establishment of a public medical service could be made by extending medical benefit to dependants of insured persons. We believe our members would be willing to pay an increased contribution for this purpose. The average man is more concerned to know that his dependants are provided with proper medical attention than he is about himself. Since the inception of National Health Insurance, although entitled to free medical attention for himself, he finds it more difficult to provide for his dependants owing to the increased fees now charged by the medical profession for private service.

This Society thinks that serious consideration should be given to the possibilities of administering workmen's compensation on lines similar to National Health Insurance. A suggestion in the evidence that medical umpires should be appointed to settle questions in dispute between the panel doctor and the regional medical officer gave rise to a lengthy examination of the witnesses as to the merits of such a proposal. It was suggested to them that their object was merely to

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1315–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

relieve themselves of the responsibility of determining in the light of the medical evidence whether a member should continue to receive benefit on the ground of incapacity for work. They said that their difficulty arose from the fact that the regional medical officer was not empowered to give a decision. He too often evaded the issue or left it too vague. They agreed that if he was able to give a decision they would not need the suggested umpire.

MEDICINE AND THE LAW.

Medical Evidence in Accidental Deaths.

A CORRESPONDENT asks our opinion on the following occurrences: (1) A man falls from a roof, fractures his skull, and is killed instantly. (2) A man commits suicide by a gas oven and dies. On both occasions a doctor was sent for and went, and in each case an inquest was held, but no medical evidence was called. It appears that a coroner is not obliged by law to call medical evidence in cases where apparently it can add nothing material to what is known as to the cause of death. No doubt medical men will not always believe that he has acted with discretion in having no medical evidence given. Mr. R. Henslowe Wellington, himself a medical coroner, wrote in 1906 ("The King's Coroner," vol. ii., p. 23): "It is not always necessary to have medical evidence at an inquest, so that the expense of calling it should not be incurred unless the coroner is satisfied that a skilled and scientific examination is necessary in order to determine the cause of death," and (p. 68) "The immediate cause of death may be shock, due to being knocked down or run over by a train, and the remote cause as to who if anyone was to blame for the death; or a person may have been seen to throw himself from a height, or deliberately cast himself into a river and drown." The object in calling medical witnesses in all such cases—namely, the elimination of other causes of death than the obvious one—could only be attained by post-mortem examination, and generally speaking would hardly be worth the expense. But a man might have died of heart failure before falling off a roof or before the gas in a gas oven operated sufficiently to kill him, and this would be worth finding out in the case of an accident if a question of insurance turned on it. In such a case, however, medical evidence would be called, unless there was independent evidence proving an accident. The medical man summoned to an inquest and not called is, of course, entitled to his fee. The Act says (Coroners Act, 1887, Sec. 22): "A legally qualified medical practitioner who has attended at a coroner's inquest in obedience to a summons of the coroner under this Act shall be entitled to receive such remuneration as follows—" which evidently contemplates the conditions described.

A Question of Time-limit.

An important decision affecting the time-limit within which actions can be brought against the officials of public authorities in connexion with the performance of their official duties was given in the Divisional Court in the case of Freeborn *v.* Leeming. The plaintiff, Mr. G. Freeborn, injured by a motor-car, was treated in the Kendal Workhouse Infirmary by Dr. R. Leeming, as medical officer to the guardians, from Sept. 5th to Oct. 15th, 1923, when he left by his own wish and went to his home in Lincolnshire. It was there found by other medical men that he had suffered all the time from a dislocated hip, which Dr. Leeming had failed to discover or to treat, and that it was then too late for the dislocation to be reduced. It was found by the county court judge, on Freeborn bringing an action against Dr. Leeming, that there had been negligence, and he awarded £1800 damages, holding that the action, commenced six months and ten days after the plaintiff left the defendant's care and was not barred by the Public Authorities Protection Act, 1893; the cause of action did not arise until damage resulted to the plaintiff from the negligence, and that such damage only resulted at the time when, if he had been properly treated, he would have been able to return to work. Section 1 (*a*) of the Act in question provides that an action shall not lie "unless it is commenced within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." Mr. Justice Salter (with whom Mr. Justice Swift agreed) held that the county court judge had decided rightly that the words "a continuance of injury or damage" meant a continuance of the act which caused the damage (Carey *v.* Mayor of Bermondsey, 20 Times L.R. 2), but that he was wrong in holding that no damage occurred in the case of the plaintiff until within six months of the commencement of the action. It was argued that if the dislocation had been reduced the plaintiff would have had to remain in bed for several weeks, and that therefore during such a period he suffered no damage. His lordship however, held that this was not so, but that the damage began to accrue from the time when the failure to discover the dislocation took place, the result of the failure being that during the time that followed it the plaintiff was becoming worse instead of better. His lordship on these grounds gave judgment allowing the appeal, and expressing regret that he had had to come to that conclusion.

The Medical Witness's Fee.

Dr. X was recently subpœnaed to give evidence on behalf of the plaintiff in a claim for compensation after an accident. The plaintiff won his case, and Dr. X is informed by the plaintiff's lawyer that he is entitled to a fee of 1 guinea plus 5*s.* expenses, but, as the defendant has not yet paid costs, Dr. X has not yet come by his money. Hitherto he has always been paid 2 guineas a day for attendance at court. Should he remain unpaid, Dr. X would like to know on whom he has any legal claim, and for how much. Speaking generally, costs of witnesses are fixed by a taxing-master or by the registrar of the county court, according to prescribed scales, with certain discretion. Presumably the solicitor was right in this case in his statement of the amount due to Dr. X after taxation, and if and when the defendant pays Dr. X will receive that sum. In the absence of any agreement for remuneration beforehand, he is unlikely to obtain more unless the plaintiff chooses to pay more. Should Dr. X find himself unable to get payment in any other way, he can claim against the plaintiff, but in that case it would be prudent to ascertain first whether the plaintiff is able to pay if he has received nothing from the defendant. Certain obvious precautions should be taken by a medical man when called upon to give evidence in a court of law. When a subpœna is served on him, he should ask for "conduct money" to which he is entitled before going to court, being not obliged to obey the subpœna until he has received it. If called on in court to give evidence, he can ask to have his fee paid before being sworn, and the judge will then decide what is a proper fee in the circumstances. In most cases, even if not called, he would still be entitled to his fee. Any witness who expects a higher fee than that ordinarily allowed on "taxation between party and party" should arrange the matter clearly then and there if he wishes to avoid disappointment afterwards. Fees thus arranged between witness and client are usually higher than those allowed on taxation.

MANCHESTER ROYAL INFIRMARY. — Sir William Cobbett has resigned the chairmanship which he has held for 21 years on account of ill-health, and Mr. R. P. Goldschmidt has been appointed to succeed him. Sir William Cobbett was knighted at the opening of the new infirmary by King Edward in 1909.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Food Preservatives and Food Adulteration.

IN the *Medicul Practicant* Dr. Jámbor writes on this subject. He says that the necessity of preserving food in some way had been recognised since ancient times. The development of the science of chemistry had placed in the hands of the manufacturer means of preserving food hitherto unknown and means of matching foods in tints and colours. He believes that the education of the public in regard to artificial colouring of foods would be quite as effective as legislation. After August 1st the new food law requires that all food products entering Roumania artificially coloured shall bear a label with a statement to that effect. The material for colouring need not be declared, except in the one case of sulphate of copper. The chief sanitary commissioner's advice to food makers is to cease using colours, and especially if the colouring is under suspicion of any kind. Concerning antiseptics in relation to foods, he thinks the rights of the consumer are paramount. He believes that there never should be an antiseptic added to foods, except when absolutely necessary, unless the consumer orders it for himself. There is, he thinks, a legitimate use for sulphurous acid as employed in the fumigation of dried fruits, and the burning of the sulphur match in wine barrels, a method which has come down from antiquity, but when it is used, as at present, greatly to excess for preserving a poor wine and putting on the market a new wine before it is aged, such use is unwarrantable. He believes that the application of the principle of honesty would cover all the needs of a food law.

Intestinal Tuberculosis in Children.

A type of tuberculosis occurring in children of farmers is described by Dr. Popovici. It affects principally the intestinal lymph glands and, though rarely fatal, may constitute a grave illness. The children become emaciated, pale, suffer from abdominal pain and tenderness around the umbilicus, headache, insomnia, and slight rise of temperature in the evening. The cervical and submaxillary glands are frequently swollen. The disease may progress very rapidly for a time, and then take on a chronic type, which is more apt to be prolonged in the older children. After the subjective symptoms disappear, anæmia and general weakness persist for a considerable period. Dr. Popovici attributes the occurrence of the disease to the fact that there was an epidemic among the cows of the district, and although their milk was wholesome (the epidemic consisting only of the occurrence of some external manifestations) it was nevertheless of very poor quality.

Removal of Large Sharp Bodies from the Œsophagus.

In the Medical Society of Cluj Dr. Koleszár spoke about the difficulty of extracting large sharp bodies from the œsophagus. He said that external œsophagotomy is the operation usually advised for their removal. The technique of the operation is difficult and the results are inconstant. It follows from this that if careful extraction can be accomplished through the mouth the results must be better than by operation, especially if operation be in the hands of a somewhat inexperienced surgeon. Dr. Koleszár cites the history of two cases which showed him conclusively that the incision of the œsophagus for the extraction of foreign bodies, even in apparently desperate cases, might not always be necessary. The technique practised is as follows. The œsophagus is exposed by the usual incision on the left side of the neck. The incision made is at least 9 cm. in length, or longer if necessary, to give the operator a full view of the œsophagus. Instead of opening the organ he practises the following method (Kramer's method). While lifting the patient's head forward and pulling the larynx up with the left hand, he endeavours with two fingers of the right hand in the wound, under the control of the X ray screen, to push the foreign body into a different position in the œsophagus. After some effort in each case this manipulation proved successful, and he was able to pass the usual slender œsophageal forceps through the mouth and remove the body which previously had resisted all forms of intrabuccal manipulation. He considers that inasmuch as the statistics show that œsophagotomy is connected with a very high mortality-rate, any method which enables the operator to remove the body without subjecting the patient to such very high risk must be of great value.

Inflammatory Process of the Sigmoid Flexure.

Dr. Dumitrescu-Mante, lecturer to the University of Bucharest, read a paper in the Bucharest Medical Society on the above subject. He drew attention to the frequency of benign inflammatory processes in and about the sigmoid flexure. As separate and distinct affections these have not received proper study and have frequently been overlooked or else wrongly diagnosed as cancer. They may be acute or chronic and are frequently followed by strictures of a moderate grade. Although extremely troublesome, they are generally amenable to treatment without operation. The use of the barium enema and the sigmoidoscope mark a very great advance in diagnosis, since a great portion of the sigmoid flexure may now be inspected directly by the latter method. Even exploratory laparotomy is often less successful than direct inspection, since the interior of the gut often gives more information than the exterior. It may well happen that the walls of the flexure are thickened to such an extent by simple chronic inflammation that the operator may have considerable doubt as to the nature of the condition. The most common symptoms are pain, irregularities of defæcation, and tenderness. The loop may be palpated as a thickened mass or as a distinct tumour. An acute sigmoiditis may be the result of simple chronic constipation. Fever and general malaise are common here, and occasionally attacks of obstruction, which yield, however, to castor oil and enemata. A mild general infection is probably set up from an acute ulceration or a diverticulum in which the fæces stagnate, with secondary irritation of the peritoneum. Inspection will generally show an œdematous and hyperæmic mucous membrane. If the intestines are distended with air, the sigmoid will not balloon out. In the chronic cases the patients are frequently so cachectic that the diagnosis of carcinoma seems probable. The mucous membranes are also very vascular here, but areas of pigmentation from former hæmorrhages are very common. The stools frequently contain mucus and blood. Follicular inflammation is rare, but may also readily be diagnosed with the proctoscope. The treatment of all these conditions calls for regulation of food and stools, mild astringent irrigations, and tonic drugs.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Annual Meeting of the A.M.A.

ONE of the more important incidents, and certainly the most exciting, of the recent meeting of the American Medical Association at Atlantic City was the discussion of a quarrel now going on between the Judicial Council of the Association and the Life Extension Institute. The latter organisation was incorporated, largely through the efforts of its President, Mr. Harold A. Ley, in 1913. The object of the institute was to encourage periodical medical examinations as a means to study early symptoms, to secure early treatment, and so save life. The Institute, though for several years run at a financial loss, has been successful in promoting the idea of medical examinations, and according to the report of the Metropolitan Life Insurance Company, whose

policy-holders are entitled to free examination by an arrangement with the Institute, it has been notably successful in reducing the mortality-rate among its clients. In the year 1923 a dividend of 3½ per cent. was paid on the preferred stock. Apparently it is only within the last two years that the officers of the American Medical Association have taken umbrage at this campaign. At the last annual meeting in Chicago the Judicial Council issued a report on the practises of certain "commercial organisations." The Life Extension Institute believes that it recognises references to its own procedure in this report and has printed a refutation in parallel columns of the statements in this report which it says are untrue. This year the Judicial Council is called on by a resolution in the House of Delegates—a resolution which warmly resents the imputation of dishonesty made by the Life Extension Institute—to present information or proof that will vindicate its position, "so that suitable action may be taken by this House."

On the motion of the Reference Committee on Reports of Officers, the following resolutions were carried:—

Resolved.—That it is the sense of this House of Delegates that periodic health examinations should be conducted by medical men and neither dominated by, nor controlled by, lay organisations, for the reason that the relation between the patient and the physician is an individual matter and anything that disturbs such relationship is detrimental to the best interests of the patient; and it is further

Resolved.—That it is the sense of the House of Delegates that every Fellow and Member of the American Medical Association should live up to the spirit and letter of this resolution.

If these resolutions should be carried out it is obvious that the Life Extension Institute would disappear. Actually two members of their Hygiene Reference Board have resigned, but the remainder, including some of the most prominent members of the American medical profession, seem to be standing behind the organisation. The indications are that the Institute will survive, and continue to work both for private applicants and for the life insurance companies.

Medical Education.

The report of the Council on Medical Education and Hospitals includes some interesting figures. In 1900 there were 160 medical schools in the United States—more than half the world supply. In all but about 30 the entrance requirements were absent or nominal; many schools had no laboratories and were not even attached to hospitals. Now, of the 70 medical schools teaching clinical subjects 34 have their own teaching hospitals and 30 have access to other hospitals by which satisfactory clinics are being regularly held. Seventy-five colleges, or 93·7 per cent., have entrance qualifications "similar to those of the rest of the world." The expense of maintaining these colleges has naturally increased. Students' fees have been raised, but even now cover only one-quarter of the increased expense. The number of approved post-graduate schools has increased from 20 to 50 in the last ten years.

WOMEN'S MEMORIAL IN YORK MINSTER: UNVEILING CEREMONY.

THE Five Sisters window in York Minster, in memory of women who gave their lives for their country in the war, was unveiled on June 24th. During the war bombs fell so near the Minster that it was decided to remove and bury the windows. It was then discovered that the glass was perishing, and the Dean sent out an urgent appeal for financial assistance to save it. So far no memorial had been erected to all the women who gave their lives in the war, and the idea arose that to save the Five Sisters window, which has always been associated with women, would be a suitable memorial. The subscription list was headed by Princess Mary with £50, and followed up by varying sums from all classes; one old age pensioner gave her weekly 10*s*. Within nine weeks over £3000 had been received, so that it was possible to erect in addition an oak screen with a roll of honour containing the names of the women commemorated, in such a position that the light shining through the window falls on the names on the screen.

The window occupies the entire end of the North Transept. It is formed of five lancet-shaped lights with a pointed panel above. Each light contains 12 panels of glass, each about 5 ft. broad by 4 ft. high. The ground-work of the whole is of whitish-green glass on which is painted in brown enamel a continuous pattern interrupted by insertions of coloured glass of different colours in geometrical designs. This style of glass is known as grisaille and the Five Sisters window contains the greatest quantity of it in existence at the present time. The name has been derived from the story, which may be true or only a legend, that five sisters who lived near York Minster embroidered tapestries of such beautiful design that the maker of the window used the designs for his glass. The window dates from the thirteenth century, but until the unveiling on June 24th, the glass has been so altered that it has not been seen in its true colours except when it was new. The lead used for the restoration was given by the owner of the old Abbey of Rievaulx in Yorkshire, and by a happy coincidence is also thirteenth century lead.

The screen has been placed in the St. Nicholas Chapel near to the window. It is made of oak which belonged to the Minster. The upper part of the screen is perforate, the lower part consists of 12 panels on which the names of the 1400 women commemorated are inscribed. Each panel is covered by a door which has to be opened before the names are revealed. Panel 6 contains the names of the women doctors, Scottish Women's Hospitals, Endell-street Military Hospital, and the auxiliary hospitals. The names of the medical women on the panel are: Dr. Laura Foster, Dr. Elsie Impey, Dr. Sybil Leonie Lewis, Dr. Isobel Addu Tate, Dr. Marion Wilson, Dr. Elsie Maud Inglis (founder of Scottish Women's Hospitals), Dr. Louisa Woodcock.

On the outside of the door of the panel is the emblem of the medical profession, the rough stock with the twisted serpent.

Deputations from all branches of women's war service attended the ceremony, including the following medical women: Miss Frances Ivens, representing the Medical Women's Federation; Dr. A. C. Scott, Delhi; Dr. M. G. Brodie, Durham; Dr. I. J. Fowler, Halifax; Dr. M. Keyes, Dr. K. E. H. Rutherford, and Dr. L. Veale, Harrogate; Dr. D. P. Priestley, Dr. A. W. Somerville, and Dr. C. Stewart, Leeds; Dr. R. Nicholson, Liverpool; Dr. J. H. Turnbull (Ministry of Health), London; Dr. E. Stone-Milestone, Sheffield; Dr. H. A. Wilson, Wakefield; Dr. J. S. Baugh, Dr. E. M. Creak, Dr. L. Fraser, Dr. H. Gibson, Dr. N. Kemp, Dr. A. Maclaren, Dr. L. Mill, Dr. P. M. Platt, Dr. Ross, Dr. Shirlaw, Dr. Urwick, and Dr. E. M. Walker, York.

At the same time as the ceremonial was taking place in York, similar services were being held in Canada, South Africa, South and West Australia, Tasmania, and New Zealand.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirty-third meeting of the Commission was held in Edinburgh on June 23rd, Prof. Alexander Gray in the chair. Evidence on the question of the supply of medicines and drugs in Scotland under the Insurance Scheme was given by Mr. Rutherford Hill on behalf of the General Council of Panel Chemists of Scotland. The National Farmers Union of Scotland, represented by Mr. J. C. Henderson, submitted evidence as to the position of agricultural societies in the scheme and the need for reducing the rate of contribution for agricultural workers in view of their higher standard of health. Dr. A. Asher, of Thurso, gave evidence on various aspects of the medical service under the Act in rural areas.—The thirty-fourth meeting was held at the Home Office, Whitehall, on June 25th, Lord Lawrence of Kingsgate in the chair. Evidence was submitted on behalf of the Queen Victoria's Jubilee Institute for Nurses by Miss Peterkin, Mrs. Bruce Richmond, and Major H. F. Cadell; the College of Nursing by Miss Watt, Miss Viney, and Miss Bremner; the Incorporated Midwives Institute by Miss Doubleday and Miss Gilligan; and the Scottish Midwives Association by Miss Barker. Thereafter Mr. J. L. Cohen, of the Department of Economics, Cambridge University, gave evidence on the structure of the Insurance Scheme and the need for fundamental alterations in certain directions.

Public Health Services.

THE HEALTH OF LONDON IN 1924.

Sir William Hamer, medical officer of health and school medical officer to the London County Council, estimates the mid-year civilian population of the County of London in 1924 as 4,576,505, and there were in addition 9495 non-civilian residents. The marriage-rate was 17·2, about the same as in the previous year. The birth-rate was 18·6, as compared with 20·1 in 1923 and 20·9 in 1922. A diagram shows that while the birth-rate has been halved since 1870, the marriage-rate has remained practically stationary. Thus the birth-rate for 1871–75 was 35·3 and the rate for 1921–25 was 20·0. During the same quinquennia the marriage-rates were 19·6 and 18·0 respectively. The regularity of the diagram is broken by the increase in the marriage-rate caused by the war marriages and a temporary subsequent increase in the birth-rate.

The *death-rate* was 12·2, as compared with 11·4 in the previous year. The increase is chiefly due to the increased fatality of measles among children under 5 years of age, and the greater number of deaths at ages over 45 due to the greater prevalence of influenza. Encephalitis lethargica caused a considerable number of deaths. The cancer and phthisis deaths increased somewhat, while a decrease occurred in the mortality from diarrhœa and enteritis. A table is given showing the death-rates for the county and the 29 metropolitan boroughs. The infant mortality for London was 69·0; the typhoid fever-rate 0·01; the phthisis-rate 0·98; and the cancer-rate 1·42. Turning to the metropolitan boroughs and excluding the small resident population of the City (13,621), the highest birth-rates were found in Shoreditch (25·0) and Bermondsey (24·3); the lowest in Westminster (11·2), Holborn (13·4), and Hampstead (13·5). The lowest death-rates from all causes occurred in Lewisham (10·4), Woolwich (11·0), Wandsworth (11·1) and Fulham (11·1); while the highest were 14·3 in Finsbury and 14·1 in Southwark. The best infant mortality-rates were in Lewisham (48), Hampstead (56), Stoke Newington (56), Wandsworth (57), and Hackney (59). Bethnal Green had a typhoid-rate of 0·10, the only other boroughs which reached 0·03 being Hampstead and Deptford. The highest rates from phthisis were 1·4 in Southwark, 1·24 in Chelsea, 1·23 in Finsbury, and 1·22 in Woolwich; the lowest being 0·66 in Hampstead, 0·68 in Kensington, 0·7 in Stoke Newington, 0·72 in Lewisham, and 0·73 in Wandsworth. The highest cancer-rates were 1·83 in St. Marylebone and 1·72 in Hampstead; the lowest being 1·0 in Paddington and 1·02 in Bethnal Green. Deaths caused by vehicles and horses show an increase. In London there were 593, 166 being children under 15. Taking for comparison Great Britain as a whole, motor vehicles caused more than eight deaths per day in 1924, being an increase of 24 per cent. on 1923. In the United States during 1924 motor vehicles caused 52 deaths per day, being an increase of 4 per cent. on the 1923 figure.

The condition of Europe as regards *small-pox* was more favourable than recently, but the presence in the North and Midlands of a mild form of small-pox was a continual menace to London. Prompt and correct diagnosis and efficient administration, in the absence of full protection by vaccination and revaccination, are the chief measures by which London is protected. The County Council places at the disposal of medical officers of health and medical practitioners in London and certain neighbouring areas the services of its expert medical staff for assistance in diagnosis, and coöperates with all the sanitary and port authorities in the country. A history is given of the five cases of small-pox which occurred in London during 1924 and of the four persons, who sojourned in London, en route for other destinations, and were attacked by small-pox after leaving.

In London the death-rate from *diphtheria* and *scarlet fever* was practically stationary, while in New York diphtheria showed a small increase on the comparatively low rate for 1923. Sir William Hamer has previously shown that from 1859 to the end of the nineteenth century New York had a far heavier death-rate from diphtheria than England and Wales or London, and suggested that in New York City, before it was extended, diphtheria deaths frequently included scarlet fever and other forms of throat inflammation. This view is confirmed by a diagram showing the similar behaviour of diphtheria and scarlet fever mortality, when taken together, in New York and London from 1866 to 1924. Except for the period from 1870 to 1890 the mortality curve of the two cities from these two diseases is very much alike. Another interesting diagram dealing with the diphtheria record of 24 towns in this country shows the remarkable way in which diphtheria gradually spreads from one part of this country to another. "The impression left on the mind," says Sir William Hamer, "is one of an eminently infectious disease, but of one which spreads quite slowly from one area, town, or country to another, so that whereas in a period of four, five, or more years a continent or large area may suffer severely, the extent to which portions of such continent or other large area are involved varies greatly within the series of years under review." The outstanding fact is that widespread epidemics of throat disease have shown a tendency to occur in Europe and America at recurring intervals of some 20 to 30 years. It has also been noted that epidemics of influenza influence throat epidemics.

There were six cases of human *anthrax* reported during the year, one of which proved fatal. In four cases the employment of the patients involved handling imported hides; the fifth case was a girl of 10, whose father and brothers handled hides, and the sixth case was thought to have contracted it from a shaving-brush. Notified cases of *encephalitis lethargica* numbered 605. In 64 cases the diagnosis was revised, reducing the number to 541, with 122 deaths and a case fatality of 45·9 per cent. The prevalence of the disease was most marked in April and May. Sir William Hamer considers in detail the relationship between influenza and cerebro-spinal fever, poliomyelitis and polio-encephalitis, and encephalitis lethargica. The pandemic of influenza in 1918 was preceded by unusual prevalence of cerebro-spinal fever in 1915, and of poliomyelitis in 1916, and was succeeded by the encephalitis prevalences of 1921 and 1924. After discussing the matter at length, Sir William Hamer inclines "to accept the conclusion that the whole group of epidemic diseases primarily affecting the nervous system exhibits a close family likeness (epidemiologically speaking) and a very close relationship, too, with influenza."

After full consideration of the circumstances of the Bethnal Green prevalence of *typhoid fever* during 1924, Sir William Hamer thinks that the various facts elucidated point very suggestively to small plaice or dabs as the source of infection. "Prior to 1906 these fish, he says, were widely implicated on several occasions in London. This cause, however, ceased to operate in 1909 and (with an exception in 1911) remained conspicuous by absence until after the war. It is suggested that this source of danger, judging from London experiences in the autumns of 1923 and 1924, has recurred and that a close watch should be kept.

The need for removing conditions likely to cause patients to discontinue attendance at the *venereal disease clinics* is receiving careful attention, and the fact that during 1924 the ratio of attendances to venereal cases was in the proportion of 32 to each new case is valuable evidence of improvement in methods. Such a ratio has never been greater in countries where compulsory notification has been adopted.

The Public Health Committee is investigating the possibility of arranging for a large scale test of

artificial light treatment under satisfactory conditions, in association with the Education Committee and in consultation with the Ministry of Health.

SCHOOL REPORT.

The school report contains several cheering items. For example, the children classed as below the normal in nutrition numbered 6·2 per cent., as compared with 12·8 per cent. in the year before the war. Had it not been for the vigilance of the head teachers and the school care committee in bringing into timely operation the remedial agencies, which now exist to an extent undreamt of before the war, the prolonged period of unemployment must have produced disastrous results. Again the percentage of verminous conditions found was 16·1, the lowest yet recorded, and the number of cases of scabies treated was the lowest since 1914. The devoted work of the *school nursing* staff, supported by the influence of the head teachers, has "literally revolutionised the standard of personal cleanliness attained by elementary school-children in London." In 1923 the proportion of older girls with hair completely free from vermin reached 80 per cent. for the first time. In 1924 the figure was 82·5 per cent. In 1902, when the work began, "the conditions found were indescribable," but in 1913 the free-from-vermin figure had only reached 67·2 for the older girls. Conditions as regards teeth have improved greatly, but "there still remains a very serious amount of dental decay."

Visual acuity also shows improvement. In 1913 the percentage of children aged 12 with vision 6/12 or worse was boys 22·7, girls 25·7. For 1924 the figures were boys 20·1, girls 21·6. The difference between the two sexes, which Sir William Hamer attributes to the employment of girls in indoor occupations involving eyestrain, has thus been reduced from 3 to 1·5. The Jewish schools show an abnormally heavy incidence of visual defects, and in this case the boys come out worse than the girls, and this is attributed to the effect upon the boys of long hours spent in the evenings studying Hebrew.

There were a number of *special inquiries* made during 1924. One was made at the request of Sir George Newman with regard to the signs and effects of congenital syphilis. Dr. Nairn Dobbie investigated the past history of children with heart disease in order to ascertain the early signs of cardiac implication. Dr. Elizabeth M. McVail followed up the school history of premature infants, and found that if such babies survived to school age there was no very great deviation from the normal in general physique. Dr. Percy Stocks made investigations on blood pressure, and found that up to 11 years the mean systolic pressure rises uniformly, that during adolescence the gradient is temporarily increased and reaches a uniform level at the eighteenth year, showing no further rise up to the age of 35 or 40; and that the diastolic pressure rises uniformly until adolescence, more slowly up to 17, then rapidly to 20, after which it falls slightly to 35. Dr. Stocks's investigations do not support the commonly accepted rule that blood pressure rises uniformly throughout life.

An inquiry with regard to the results of operations on tonsils and adenoids supports the view that complete removal of the tonsillar tissue is desirable. The result of the first and second reinspections of children found with defects showed that 75·5 per cent. of such children had been satisfactorily treated. Dental cases present the greatest difficulty, and apart from dental cases 82 per cent. of the ailments were remedied. Convalescent camp schools and arrangements for sending debilitated children to convalescent homes for short periods did good work. The camp school at Bushey Park dealt with 16,296 boys between June, 1919, and December, 1924. It is hoped shortly to establish new open-air schools on Brixton Hill and near Ken Wood. Open-air classes were held in connexion with 95 ordinary elementary schools as compared with 89 in 1923. Attention to physical education is "decidedly on the up grade." Over 11,000 girls were taught to swim during the year and 2875 life-saving certificates were gained. Net-ball is the chief organised game played by the girls. Health classes with special exercises for round shoulders, lateral curvature, lordosis, and flat-foot give good results, and were in operation at 41 schools at the end of the year. Dr. F. C. Shrubsall has specially investigated the effects of encephalitis lethargica and also supplies a report on the mental examination of delinquent children, which includes inquiries made with regard to this subject in the Canadian provinces and the Northern United States.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 20TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 89; scarlet fever, 1310; diphtheria, 830; enteric fever, 58; pneumonia, 821; puerperal fever, 41; cerebro-spinal fever, 9; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 61; dysentery, 3; ophthalmia neonatorum, 104. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 62 from measles, 12 from scarlet fever, 62 from whooping-cough, 21 from diphtheria, and 32 from influenza. In London itself the deaths from influenza numbered 8, from whooping-cough 11, and from diphtheria 4.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. H. Lightfoot is placed on the Retd. List with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Cowan retires, receiving a gratuity.

TERRITORIAL ARMY.

Lt.-Col. W. Bowater to be Bt.-Col.

Maj. H. F. Humphreys to be Lt.-Col. and to comd. the 143rd (South Midland) Field Ambulance, vice Bt.-Col. W. Bowater.

Capt. F. M. Halley is restd. to the estabt.

Lt.-Col. (Brevet Col.) D. J. Graham is retired on completion of tenure of comd. and retains his rank.

Maj. D. M. C. Church (I.M.S. ret.) to be Maj.

Capt. R. F. Linton resigns his commn. and retains the rank of Capt.

Capt. G. S. Lewis (late R.A.M.C., S.R.) to be Capt.

A. O. Bekenn and G. W. Robinson to be Lts.

Supernumerary for Service with O.T.C.—Capt. R. B. Green (late R.A.M.C., S.R.) to be Capt., and J. Whillis to be Lt., both for service with the medical unit, Durham University, O.T.C.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lt. C. R. Henderson to be Capt.

The King has approved the retirement of Col. P. Dee and Lt.-Cols. R. Bryson (on account of ill-health) and A. M. Fleming.

Aziz Khan Mahomed Khan and Ganeshrao Venkatrao Gollerkeri to be Temp. Lts.

Capt. J. M. R. Hennessy has been succeeded as Superintendent of the Borstal Institution at Lahore by Capt. N. Briggs; Maj. Thomas acts as Civil Surgeon, Poona, and Maj. B. F. Eminson acts as Civil Surgeon, Karachi. Maj. W. A. Mearns, Officiating Director of Public Health, United Provinces, has been appointed a member of the State Board of Medical Examinations, United Provinces, vice Lt.-Col. C. L. Dunn, resigned. Rai Bahadur Dr. D. D. Pandva, Assistant Director of Public Health, in charge Provincial Hygiene Institute, Lucknow, is continued in his appointment as a member of the State Board of Medical Examinations. Lt.-Col. W. D. Richie has been placed on special duty in Assam; Lt.-Col. G. Tate has been appointed Professor of Midwifery, King Edward Medical College, Lahore; and Mr. H. A. Taylor acts as Lecturer on Dental Surgery, Medical College, Calcutta, vice Mr. J. E. Gill.

Leave has been granted to the following officers: Lt.-Col. G. W. Maconachie, Superintendent of Prisons, Madras; Col. Bakle, Inspector-General of Civil Hospitals; Maj.

St. J. E. Handricks, civil surgeon and superintendent, District Jail, Bhandara; Maj.-Gen. Robinson, Director of Medical Services in India; Lt.-Col. Mackie, director, Bombay Bacteriological Laboratory; Maj. H. W. Acton, professor of pathology and bacteriology, School of Tropical Medicine and Hygiene, Calcutta; Capts. W. A. C. Netscher, medical officer, Eastern Bengal Railway, Kanchrapara; R. E. Murray, civil surgeon, Shahpur; Lt.-Col. Murphy, director of public health, Bombay; Lt.-Col. Davenport Jones, civil surgeon, Karachi; and Lt.-Col. Steel, civil surgeon, Poona.

DEATHS IN THE SERVICES.

Major-General Sir Henry Neville Thompson, K.C.M.G., C.B., D.S.O., late R.A.M.C., died on June 21st at Osborne aged 64. The son of the Rev. M. N. Thompson, rector of Clonmany, Donegal, he graduated in arts and medicine at Trinity College, Dublin, in 1883, entered the Army Medical Service in the following year, and reached the rank of surgeon-major in 1896. In 1898 he became major, R.A.M.C., lieutenant-colonel in 1904, and colonel in 1913. He served in the Nile Expedition of 1898 (medal and Khedive's medal); in the South African War, 1900–02 (mentioned in despatches, Queen's medal with five clasps, and the King's medal with two clasps, and D.S.O.). In the late war he was A.D.M.S., 2nd and 48th Divisions; D.D.M.S., VI. Corps; and D.M.S., First Army and British Army of the Rhine (mentioned in despatches seven times, and received the K.C.M.G. and C.B.). Additional honours included the decoration of the French Croix de Guerre and the American Distinguished Service Medal. He was also a Grand Officer of the Portuguese Order of St. Aviz, and held the Coronation and Delhi Durbar Medals and the King George Coronation Medal.

Correspondence.

"Audi alteram partem."

THE PROBLEM OF MALIGNANCY.

To the Editor of THE LANCET.

SIR,—Dr. A. E. Barclay's important suggestion regarding what he calls the existence of an *x* factor in malignant disease is of deep interest to us as we have been working for some years on this matter. Our results up to date are embodied in a recently published book.[1] It will be sufficient here to say that we believe—on what we think to be strong evidence—that chronic intestinal infections and consequent toxæmia from organisms of the non-lactose-fermenting type play a most significant part in the causation of cancer. We do not doubt there are other factors—diet, for example, influences these infections in a very marked manner, but toxæmias are of primary importance; correspondingly vaccines given at suitable intervals (long pauses being needed between doses) bring about marked effect in a large percentage of cases of malignant disease.

We are, Sir, yours faithfully,

EDWARD BACH.
CHARLES E. WHEELER.

June 26th, 1925.

To the Editor of THE LANCET.

SIR,—Dr. A. C. Jordan, in his kindly comment on my paper, is apparently in entire agreement with me, but would have me go further. The unknown *x* that I postulate he would have me name as "the toxæmia of stasis." This, however, is going a great deal further than my own observations would in any sense justify. *X* may possibly be a toxæmia, but if it is intestinal in origin, surely the removal of the faulty intestine, together with the complete removal of the growth, must inevitably cure the patient. So far as I am aware, there is no evidence pointing in this direction.

To attribute all and every disease to intestinal stasis and to label as "stasis" conditions in the bowels which are compatible with healthy longevity, is, to my mind, unscientific. Because they see what appears to be delay, according to their ideas as to what should happen, the stasis school would have us at once label this supposedly pathological delay as the cause of all our ills, whether it be cancer or bad teeth. Surely it is more likely that our structure is so ordered as to tolerate these terrible "cesspool" conditions, and that they may actually serve a useful function in the economics of life. The human frame is not made to standard, and what is one man's meat is another man's poison. So also what is stasis in one man is normal function in another. Where one man suffers from depression and headaches, and is thoroughly tired of the world if he does not have a daily evacuation, another suffers from other ills if he attempts to worry his intestines into a daily habit when his natural cycle would be an evacuation every two or perhaps three days. To see robust health and the apple face of perfect health in a woman whose habit is, and always has been, a motion once every three weeks or month should surely cause the most ardent stasis enthusiasts to call a halt.

What we need is some idea as to the possible normal variations as regards the passage of the intestinal contents. So far neither Dr. Jordan nor any of the "stasis school" have convinced me of the soundness of their premises, and I am a long way from identifying my hypothetical *x*, the underlying cause of cancerous growth, with the much abused "toxæmia of stasis."—I am, Sir, yours faithfully,

Manchester, June 26th, 1925. A. E. BARCLAY.

[1] Chronic Disease: a Working Hypothesis. London: H. K. Lewis. 7*s*. 6*d*.

THE TREATMENT OF PERFORATED GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—Statements have been recently made that the operation for closure of a perforation effects permanent cure of the ulcer. My personal experience does not endorse this teaching. I have seen cases in which the symptoms of ulceration afterwards became as accentuated as before, and in which posterior gastro-jejunostomy without loop and without clamps followed by rest cured the patients. And during the 28 years which I have exclusively practised this method (with catgut suture of mucous coat and silk of serous) I have not seen a case of peptic ulcer follow.

My plan in cases of acute perforation is to open the abdomen as quickly as possible, involute the opening by interrupted silk Lembert sutures, and fix a patch of omentum over same. Having completed the toilet, the parietal wound is united by interrupted through-and-through double silkworm-gut sutures, leaving space at upper angle for passage of a wisp of silkworm-gut. This drain is not removed before the fifth day. The patient is then kept at rest in bed for one month on milk with the addition of glucose, whisky, or brandy to taste. After a few days' trial of additions, preference is generally expressed for the milk which is always diluted with citrate or other water. Posterior gastro-jejunostomy is then performed and similar rest and diet continued for another month, at the end of which a month of milk pap, glucose, and egg nog dietary begins.

Before discharge the patient's menu for the ensuing year is mapped out, with rider to cleanse his teeth morning and evening with a soft brush and soda or plain water, to eat meat cooked to a turn, to eschew bread and other carbohydrates in quantity, to follow the good example of all reasonable animals by resting for at least half an hour after the midday meal, to limit fruit-eating to early breakfast, and to take at lunch and dinner his coefficient of whatever alcoholic beverage suits him best. To which is added: avoid alcohol between meals, do not smoke before lunch, and do not be tempted to imbibe milk or tea with a meat meal.

If some such plan of post-operative rest and dietary were generally adopted we should hear more of the virtue of gastro-jejunostomy and less about that of gastrectomy. The cells have got to do the healing, and given the general feeble power of resistance which exists in everyone who develops a chronic

ulcer of stomach, there is no reason to assume that the chances of cure will be enhanced by the substitution of a large acute wound for a small chronic one. The employment of the cautery for removal of benign ulcers of stomach is not in harmony with the natural laws which favour prompt restitution of normal tissue.

To all about to undertake gastric surgery I commend the careful study of two illuminating contributions to surgical science: Hilton's "Rest and Pain," and Paterson's "The Lure of the New."

I am, Sir, yours faithfully,

Buenos Aires, May 10th, 1925. JOHN O'CONOR.

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—We have every reason to be grateful to Mr. George C. Cathcart for calling attention to a form of treatment which deserves much more serious consideration than it has received up to the present. After three years' experience I can fully endorse Mr. Cathcart's favourable view. My results are particularly gratifying in children, in those cases where the middle-ear deafness has not been relieved by the removal of tonsils and adenoids, or by a subsequent course of inflation.

I also should be glad to know more on the subject of the pathological explanation of the improvement in the old-standing cases, as has been mentioned by previous correspondents. The inventor of the apparatus, Mr. Zund-Burguet, himself believes that actual circulatory and nutritive changes occur in the middle-ear structures and cochlea as the result of the intense physiological stimulation. Some change at the peripheral end-organ is likely, as otherwise it is impossible to explain why tinnitus and vertigo disappear. But perhaps the change may be more central, in the nerve paths and synapses linking up the auditory nucleus with the centres in the temporal lobes. These may have been disused for years and are reawakened to function, in which case a true re-education occurs. The improvement could then be explained on the same lines as the improvement in one or both ears which patients very occasionally experience as the result of using the head-phones of the wireless.

I am, Sir, yours faithfully,

Leicester, June 27th, 1925. JOHN A. KEEN.

Obituary.

HENRY GRÆME ANDERSON, M.B.E., M.D. GLASG., F.R.C.S. ENG.

THE sudden death of Mr. H. Græme Anderson, surgical consultant to the Royal Air Force, from angina pectoris on June 28th last removes a capable surgeon from the medical world of London at the early age of 43. Mr. Anderson received his medical education at the University of Glasgow, and in London at King's College and the London Hospital. He graduated M.B., Ch.B. Glasg. in 1904 and five years later obtained the Fellowship of the Royal College of Surgeons of England. In 1919 he gained the M.D.Glasg. with commendation. After graduation Mr. Anderson held hospital appointments for nearly five years, two of which were spent as surgical registrar and pathologist at the Metropolitan Hospital, followed by two years in a similar capacity at St. Mark's Hospital for Cancer and Diseases of the Rectum. At the time of his death he was surgeon to St. Mark's Hospital, senior assistant surgeon to the Belgrave Hospital for Children, and surgical specialist to the Ministry of Pensions. In August, 1914, he joined the Royal Navy as a surgeon lieutenant and was attached as surgeon to the original R.N. Air Service expedition, and was subsequently transferred as major to the Royal Air Force Medical Service. He was appointed surgeon to the British Flying School at Vendôme, France, in 1917, and in 1918–19 was surgeon to the Central R.A.F. Hospital.

Becoming associated with the Royal Naval Air Service early in his period of war service he set about studying the various medical problems of flying with skill and enthusiasm—himself taking a pilot's certificate. Naturally the surgical side claimed his particular attention, although he by no means confined his interests to this, but studied generally the best means of effective selection and care of pilots in the widest sense. In addition to various papers he subsequently embodied his experiences in a valuable book on the "Medical and Surgical Aspects of Aviation" (Oxford Med. Publications, 1919). After the war he resumed practice in Harley-street, but remained surgical consultant to the Royal Air Force, and of him in this capacity Group-Capt. Martin Flack, the Director of Medical Research (R.A.F.), writes: "His services proved of the very greatest value, not only on account of his all-round skill as a surgeon, but on account of the fact that, owing to his intimate acquaintance with aeronautics, he was able also to assess the effect upon flying of various disabilities from the psychological and aeronautical points of view. By his charming personality he earned himself a special place in the affection of his colleagues of the Royal Air Force Medical Service; by his skill he earned the gratitude of his many patients in that service. His early death is a blow to all who were connected with him in these duties, and it can be truly said that he leaves a place which it will be very difficult to fill."

Mr. Anderson, in addition to his work in aviation, made many important contributions to surgical literature dealing with diseases of the rectum. In Burghard's "System of Operative Surgery" he wrote the article on Combined Operations for Excision of the Rectum, and in the "Encyclopædia of Medicine and Surgery for Practitioners," the section on the Rectum. Several papers in the medical journals deal with the treatment of hæmorrhoids.

Mr. J. P. Lockhart-Mummery writes: "Henry Græme Anderson's sudden death is a great blow to all who knew him. He was just at the age when he was coming into the fulfilment of his ambitions, and the results of his many years of hard work were beginning to earn their own reward in steadily increasing practice and reputation. Mr. Anderson was a colleague of mine at St. Mark's Hospital for so long that it is difficult to realise that his ready help and sympathy are no longer available. He was a keen sportsman, and was particularly interested in boxing. There have been few boxing matches of importance in London in recent years at which he was not to be seen at the ring side. He was one of the founders of the Proctological Section of the Royal Society of Medicine, and modern rectal surgery owes very much to Mr. Anderson for the advances of the last ten years.

Mr. Anderson is survived by his widow and a daughter.

WILLIAM JAMES JOHNSTONE STEWART, M.D. EDIN., D.P.H. CAMB.

WE regret to record the death of Dr. W. J. J. Stewart, medical superintendent of the Willesden Municipal Hospital. Dr. Stewart had been in poor health for some time, and his final illness was the result of influenza contracted early this year.

Born in 1868, he studied medicine at the University of Edinburgh and King's College, London, graduating M.B., C.M. Edin. in 1891. Four years later he obtained the D.P.H. Camb., and, in 1896, the M.D. Edin. He devoted his life to the study of infectious diseases and the administration of isolation hospitals, and he

was recognised as one of the first authorities on these subjects in the country. During the war he was chosen by the War Office to take charge of the Addington Park War Hospital for soldiers suffering from infectious diseases. He built up and administered this large hospital in a manner which gave the highest satisfaction to both the military and civil authorities concerned. Dr. Stewart had been in the service of the Willesden Council for the past 22 years, and during his period of office the hospital came to be regarded by the public and by the council as one of the best of the municipal institutions of Willesden.

Dr. G. F. Buchan writes of him: "Dr. Stewart's loss will be felt keenly by all his colleagues, for he was a genial man with a kindly heart and ever ready to exert himself and take any amount of trouble to help his juniors and further their interests. Dr. Stewart was one of the many silent workers in the municipal service whose works are more the subject of criticism than of praise, but who nevertheless at all times and in all circumstances perform their duties with a singleness of purpose and conscientiousness which is characteristic of the official life of this country."

Dr. Stewart leaves a widow, to whom we extend our sympathy.

HAMILTON DRUMMOND, M.B., B.S. DURH., F.R.C.S. EDIN.

IT is with sincere regret that we record the tragic death, at the age of 41, of Mr. Hamilton Drummond, who was one of the best-known surgeons in Newcastle-on-Tyne. Mr. Drummond was the victim of a fatal accident on June 27th, while motoring to Newcastle from Fourstones, where he was serving in his capacity of Major, R.A.M.C.T., at the summer camp of the Northumberland Hussars. It is presumed that his car swerved and so overturned, whereby he sustained a fractured leg and other injuries, and died six hours after the accident. Mr. Drummond was a son of Sir David Drummond, C.B.E., M.D., Pro-Vice-Chancellor of Durham University, and President of the University of Durham College of Medicine. He studied medicine at the Newcastle-on-Tyne School of Medicine and at the London Hospital, graduating M.B., B.S. Durh. in 1906. In 1912 he became a Fellow of the Royal College of Surgeons of Edinburgh. Before taking up practice as a surgeon in Newcastle Mr. Drummond held in succession several valuable house surgeonships, and was a demonstrator of anatomy in University College of Medicine of Durham. From surgical registrar at the Royal Victoria Hospital, Newcastle, he became assistant surgeon to that hospital, and at the time of his death was consulting surgeon to the Jubilee Infirmary, North Shields, the Haltwistle War Memorial Hospital, and the Princess Mary Maternity Hospital, Newcastle.

Mr. Drummond made many contributions to surgical literature, particularly on conditions of the lower bowel.

THE LATE DR. J. L. DALBY.—Dr. John Lyttleton Dalby, who died at Hove on June 23rd, had practised for a number of years in Brighton and Hove, where he was held in general esteem. He was still in the prime of life, his death following an urgent operation. He was the only son of the late Major Dalby, of Ealing, and studied medicine at St. Bartholomew's Hospital, becoming a licentiate of the Royal College of Physicians in 1894 and M.R.C.S. in the same year.

HOSPITAL COOKING BY ELECTRICITY. — A new electrical cooking equipment has just come into operation at the Bucks County Mental Hospital at Stone, near Aylesbury, and it is claimed that this is the first asylum to make this departure. Considerable economies are looked for in consequence, and it is said that 17 per cent. of the shrinkage in meat in the course of cooking will be saved. There are over 800 patients, but the equipment is capable of cooking for 1000.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the Third Examination for medical and surgical degrees held recently the following candidates were examined and approved in the undermentioned subjects:—

Part I., Surgery, Midwifery, and Gynæcology.—A. Barker, W. A. Barnes, I. C. P. Beauchamp, C. B. Buckley, R. C. L'E. Burges, N. F. C. Burgess, J. W. D. Buttery, G. A. H. Buttle, R. T. Chadwick, J. E. Church, D. R. T. Clendon, A. C. Copley, A. F. D. Darlington, J. H. T. Davies, R. K. Debenham, J. V. Dockray, A. Elliot-Smith, V. H. Ellis, C. A. Francis, J. H. Francis, J. A. Galletly, S. E. Gawthrop, J. H. Gibbons, N. M. Goodman, H. W. Gordon, J. L. Groom, K. H. A. Gross, J. H. Hannan, P. M. D'A. Hart, C. H. Hilliard, J. C. Hogg, L. E. Houghton, R. H. Metcalfe, E. F. Malony, J. L. Morgan, H. W. Nicholson, G. F. Oakden, L. V. Pearson, C. P. Pinckney, K. G. Salmon, D. G. Shields, A. Simpson-Smith, H. B. Stallard, R. S. Tooth, K. H. Uttley, and H. M. Woodman.

Part II., Principles and Practice of Physic, Pathology, and Pharmacology.—T. F. Anderson, W. A. Bourne, H. F. Brewer, G. A. H. Buttle, W. E. Chiesman, W. R. F. Collis, H. V. Coverdale, J. E. D. Crozier, C. H. C. Dalton, J. H. T. Davies, P. O. Davies, V. W. Dix, J. M. Dobie, H. W. Eddison, J. L. Edwards, A. Elliot-Smith, G. S. W. Evans, K. Fletcher-Barrett, J. H. Francis, P. M. D'A. Hart, N. H. R. Hatfield, R. A. Hickling, J. Holmes, M. C. H. Kingdon, R. L. Lancaster, D. P. Marks, J. P. Marsden, L. P. Marshall, L. M. Maybury, K. F. T. Mills, E. B. Murrell, G. L. F. Rowell, J. Russell Smith, A. J. Smythe, E. W. P. Thomas, S. Vatcher, H. A. Ware, and I. M. Harmer (Girton).

UNIVERSITY OF SHEFFIELD.—At the undermentioned examinations held recently in the Faculty of Medicine the following candidates were successful:—

M.D.—Clara D. Tingle.

Final M.B., Ch.B.—With Honours: John Wilke (with distinction in Surgery and Gynæcology). Ordinary: Douglas L. Brown, John S. Calcutt, Ralph K. Dowson, Dorothy L. Gregory, Marion Hirst, Wilfrid Malone, Samuel Newsom, George W. Rippon, and Lucy T. Winskill.

Final L.D.S. Examination (Part I.).—George H. Rayner.

UNIVERSITY OF LONDON.—His Majesty in Council has declared his approval of the amendment of the statute governing the membership of Convocation. Hitherto bachelor graduates have only been able to join Convocation after the expiration of three years from the date of graduation. The attention of Convocation and the Senate was directed to this three years' barrier at the request of the Twentieth Century Society of London Graduates and, under the statute as now amended, all graduates who have attained the age of 21 years are entitled to be registered as members of Convocation.

At a meeting of the Senate of the University of London, held on June 24th, Prof. E. A. Gardner, Litt.D., was re-elected Vice-Chancellor for the year 1925–26.—Correspondence has passed between H.M. Treasury and the University on the subject of the Bloomsbury site. The main outcome of the correspondence is that, as the Treasury is not able to hold out any hope that Parliament could be asked to contribute a larger sum than £370,000, representing the commercial value of the site and buildings of King's College in the Strand, the Senate find themselves compelled to decline the offer, made by the Treasury in 1920, which was accepted by the Senate on the condition that terms of removal would be negotiated between the Government, the Council of King's College, and the Senate of the University. The Senate point out that this condition obviously cannot now be fulfilled.—The title of Emeritus Professor of Hygiene and Public Health in the University was conferred on Sir William J. R. Simpson as from the end of the present session on his retirement from King's College, after 27 years' service, on the closing of the department of bacteriology and public health.—The University Studentship in Physiology for 1925–26, of the value of £50 and tenable for one year in a physiological laboratory of the University or of a school of the University, has been awarded to Mr. Isaac Cohen, Ph.D., B.Sc. He proposes to carry out research on tethelin under the direction of Prof. E. C. Dodds at the Bland-Sutton Institute of Pathology at the Middlesex Hospital Medical School.

UNIVERSITY OF PARIS: FACULTY OF MEDICINE.—A post-graduate vacation course in the diseases of children will be held from July 24th to August 14th at the Hôpital des Enfants Malades, 149, Rue de Sévres, Paris, under the direction of Prof. Nobecourt, assisted by Prof. Lereboullet. Lectures and demonstrations will be given twice daily by members of the hospital staff, and an instructional clinic will be conducted each morning by Prof. Nobecourt. The fee for the course is Fr.150. Further information may be obtained from the secretary to the Faculty of Medicine, The University, Paris.

UNIVERSITY OF BRISTOL.—The thesis presented by Francis J. Hector, M.B., Ch.B. Bristol, for the degree of M.D., has been approved by the examiners.

WIRELESS FOR HOSPITALS.—The Wireless for Hospitals Fund, initiated by the proprietors of the *Daily News*, now has between £14,000 and £15,000 in hand, and the advisory council of the fund has decided to equip the largest hospitals first. Twelve of them, beginning with St. Thomas's (630 beds) and ending with the London Temperance (130 beds) are to be supplied as quickly as possible.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE: APPROVED DESIGN.—Mr. P. Morley Horder's design for the new building has been unanimously adopted by the board of management. Competition was limited to five architects who had specialised in the planning and equipment of the type of building required, and Sir Frank Baines, Director of Works at H.M. Office of Works, acted as assessor. Mr. Morley Horder becomes the architect of the building.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The Midland branch of this society proposes to commemorate the knighthood just bestowed upon the medical officer of health for Birmingham by holding a complimentary dinner to Sir John and Lady Robertson at the Queen's Hotel, Birmingham, on Friday, July 10th, at 7 for 7.30 P.M. All members of the Society of Medical Officers of Health are invited to attend this dinner and to bring guests. Early application for tickets (10*s.* 6*d.* not including wines) should be made to Dr. R. H. H. Jolly, hon. secretary, Health Offices, Town Hall, Wolverhampton.

STRASBOURG.—A post-graduate course in dermatology and venereology will be held from Sept. 21st to Nov. 7th, under the direction of Prof. L. M. Pautrier, assisted by Profs. A. Barré, L. Blum, G. Canuyt, Merklen, and others. Complete and practical instruction in all aspects of the specialty will be given at the civil hospital and at the various clinics of the town. The fee is Fr.200. Also a course in laboratory methods and in the general pathological anatomy of the dermatoses will be held if sufficient names are received (minimum, five); the fee will be Fr.150. Full particulars may be obtained from Prof. L. M. Pautrier, 2, Quai St. Nicolas, Strasbourg.

MEDICAL RESEARCH COUNCIL: ROCKEFELLER MEDICAL FELLOWSHIPS.—The Medical Research Council announce that they have awarded Rockefeller Medical Fellowships, tenable in the United States of America during the academic year 1925–26, to the following: Dr. David Campbell, Pollok lecturer in pharmacology and therapeutics, University of Glasgow; Dr. William H. Craib, *M.C.*, house physician, Guy's Hospital, London; Miss Katherine H. Coward, D.Sc., assistant in biochemistry, University College, London; Dr. William S. Dawson, senior assistant, Maudsley Hospital, London; Dr. Howard W. Florey, John Lucas Walker student, University of Cambridge; Mr. Arthur D. Ritchie, lecturer in physiological chemistry, University of Manchester; and Dr. George P. Wright, Macgregor student and demonstrator in histology, University College, London. Dr. Craib, Dr. Florey, and Mr. Ritchie have been appointed on modified conditions while holding scholarships or emoluments from other sources. Mr. Ritchie's Fellowship is being held during a short period of work in Canada this summer.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On July 9th Mr. G. Grey Turner will lecture on Gall-stone Ileus—a Pitfall for the Practitioner, at 5.30 P.M. in the West Lecture Hall, at 1, Wimpole-street, W. The Prince of Wales's General Hospital (North-East London Post-Graduate College, Tottenham, N.) will hold a vacation course from August 4th to the 15th in medicine, surgery, and the specialties. The mornings will include demonstrations of clinical and laboratory methods, in the afternoons groups of illustrative cases, &c., cliniques in the wards and the various out-patient departments. Formal lectures will be given at 4.30 P.M., to which members of the Fellowship of Medicine will be welcomed. Beginning on the same date the All Saints' Hospital will give a month's special course dealing with diseases of the urinary system. Clinical demonstrations will be given and a special lecture each Wednesday afternoon. From August 24th to Sept. 5th the Queen Mary's Hospital, Stratford, have arranged an intensive course in medicine, surgery, and the special departments. A feature of the course is the new department opened for gynæcology and obstetrics. The fee for both intensive courses is £3 3*s.* each, or £2 2*s.* for either week, and for the special course in urology £5 5*s.* Copies of the syllabus of each, together with the Fellowship programme of the general course of instruction available under its scheme, may be obtained from the Secretary at 1, Wimpole-street, W.

WATFORD MEMORIAL HOSPITAL.—Princess Mary last week opened the Watford and District Peace Memorial Hospital of 108 beds, which has been erected at a cost of £66,000.

PRESENTATION OF AN OUT-PATIENTS' DEPARTMENT. An anonymous Wakefield man, now resident in the United States, has promised to provide a new out-patients' department at the Clayton Hospital, Wakefield. Such a department is urgently needed, the existing one being entirely inadequate; last year there were nearly 40,000 attendances.

STREATFEILD RESEARCH SCHOLARSHIP.—Applications are invited for this scholarship which is awarded for the promotion of research in medicine and surgery by a committee of the Royal College of Physicians of London and of the Royal College of Surgeons of England. The scholarship is worth about £250 per annum, and is tenable for three years. Further directions will be found in our advertisement columns.

THE King has sanctioned the following promotions in and appointments to the Order of the Hospital of St. John of Jerusalem in England:—As *Knights of Grace:* Lieut.-Colonel F. S. Lambert, R.A.M.C. (T.); Major-General Sir Samuel Guise Moores; Dr. Frederick J. Waldo; Captain William Thomas Wood, R.A.M.C.; Dr. Arnold Woodford Izard; and Dr. Donald Moore Barry. As *Esquires:* Dr. John Calderwood Strathearn, Dr. Walter Chaloner Rigby, Dr. John Rodley, and Dr. William Haining Carse.

MANCHESTER INFIRMARY: APPEAL FOR NEW NURSES' HOME.—The Manchester Royal Infirmary has issued an appeal for £150,000 to build and equip a new nurses' home which is urgently required for accommodation of an increased staff. The patients in the Royal Infirmary are well nursed, but at a too great cost to the health of the nurses. The day staff works 63 hours a week and the night staff 73 hours. The following data are given for comparison:—

Hospital.	Hours of work.	
	Day.	Night.
Aberdeen	52	52
Sheffield	56	64
Newcastle	60	69
Manchester	63	73

The board desire to give an all-round working week of 56 hours. The working hours of the maids must also be shortened. In order to do this, 87 additional nurses and 85 additional maids will be required. The nurses, by means of a bazaar, have already raised £5000.

NEW TILBURY HOSPITAL.—Lady Inchcape opened, on June 24th, the new wards of the Tilbury Hospital, erected by the Seamen's Hospital Society on a site rented from the Port of London Authority and within the area of Tilbury Docks. This is an extension of the Passmore Edwards Tilbury District Cottage Hospital founded in 1896, which provides beds not only for seamen, but also for the sick of the surrounding neighbourhood. Of the two new wards, which will accommodate 52 patients, one is for women. Built by Messrs. Mowlem, they were designed by Mr. Stanley Hamp in bungalow style ("not," said Sir Arthur Clarke, the chairman of the society, "that they are a bungle for they are not, but we do owe for them," and, very pertinently, Lady Inchcape thereupon handed to him Lord Inchcape's £500 subscription). The buildings are carried on concrete rafts, and the walls are of hollow triangular cement blocks, hard outside, soft within, securely keyed together. The ceilings are coved and white, but the lower 8 feet of the walls is painted a restful grey which lessens eyestrain. The operating theatre is all white. The floors are also greyish, mottled ("Marvel" flooring), not noisy, of composition similar to the well-known sawdust and gypsum. The bedside lockers are of solid construction and, when turned through a right angle, make steady bed-tables for patients confined to bed. The windows are iron-framed, and in two halves; as the window is opened by the handle, the lower part of the lower half moves outwards and the upper inwards, while the upper sash at the same time moves parallel (lower out, upper in), thus rain is excluded and incoming air directed upwards, so that draughts do not blow on the patients. Angles are all rounded, and the doors are teak, smooth finished to prevent dust lodging; the handles, too, are teak, and the lavatory taps are white-enamelled iron, so there is little to polish anywhere. There is a coal fire in each ward, but otherwise the heating throughout is by radiators, the cooking by gas and steam. In the Nurses' Home each nurse's room has a fixed basin with hot and cold taps over it, and there are sitting and recreation rooms. Two of the beds in the hospital were already endowed, and the chairman was happy in being able to announce that King George's Fund for Seamen would give £1000 to endow another.

THE death of Mr. Thomas Mark Hovell, F.R.C.S. Edin., the well-known laryngologist, at the age of 72 years, is announced as having occurred at Hatfield on June 30th. Mr. Hovell was lecturer on diseases of the throat at the London Hospital and consulting surgeon to the Golden-square Hospital.

THE managers of the Pinsent-Darwin Studentship in Mental Pathology announce that no award has been made this year.

DONATIONS AND BEQUESTS.—Mr. Henry Cornelius Baker, Clifton, Bristol, bequeathed £1000 each to the Bristol Royal Infirmary, the Bristol General Hospital, and Dr. Barnardo's Homes, and £500 each to the Royal Hospital for Women and Children, Bristol, to Müller's Orphanage, and the Bristol Eye Hospital.—During the past month the Royal Manchester Children's Hospital has received subscriptions and donations amounting to £819, including £500 from the Manchester War Memorial Committee.—Sir David Lionel Goldsmid Stern-Salomons, Tunbridge Wells, bequeathed £5000 to Gonville and Caius College, Cambridge, for the fund for increasing the College buildings, and to the Royal Institution some of his scientific apparatus.

ST. BARTHOLOMEW'S HOSPITAL POST-GRADUATE COURSE.—A course of instruction for qualified practitioners will be given at St. Bartholomew's Hospital during the summer vacation from Sept. 7th to 18th inclusive. The object in view is to afford practitioners an opportunity of attending the practice of a large metropolitan hospital and medical college for a short period and of receiving systematic teaching from members of the hospital staff at a time when ordinary lectures and classes for students are in abeyance. A composition fee of ten guineas entitles the practitioner to attend any of the arranged classes as well as the ordinary hospital practice, including wards, out-patients, special departments, operations, and post-mortems. Either of the two weeks may be taken for a fee of six guineas. Application should be made to the Dean, Dr. T. W. Shore, at the Medical College, St. Bartholomew's Hospital, London, E.C.

LANCASHIRE AND CHESHIRE MINERS' CONVALESCENT HOME.—The corner-stones of the convalescent home for the miners of Lancashire and Cheshire, which is to be built at Bispham near Blackpool, was laid on June 26th. The home will be built and equipped out of the Lancashire and Cheshire Welfare Committee's share of the welfare levy of one penny per ton on the coal output for five years, authorised under Section 20 of the Mining Industry Act of 1920. This share on May 31st last, with interest, was £283,406. The estimated cost of the building is about £105,000, and equipment is expected to cost about £20,000. The balance will be invested and the income devoted to the maintenance and upkeep of the home, the site of which is about 7¼ acres in extent, facing the sea. The home is planned to accommodate 125 patients, but dormitories for 100 only are at first being provided. Construction was begun in September last and the building is expected to be finished in June next.

"BAY MOUNT," PAIGNTON.—The third annual report gives a clear indication that this comparative newcomer to the ranks of inebriates' homes is rapidly approaching the ideals which have been discussed from time to time in these columns with regard to the treatment of alcohol and drug addicts. The medical superintendent, Dr. Stanford Park, carefully defines what he means by the word "cure"—namely, "that all active craving has been removed and will not come back unless cultivated by the use of alcohol," and then reports that 88 per cent. of those patients classified as curable on admission during the year under review remain cured to date, while 57 per cent. of those classified as incurable have likewise remained free from relapses. It is interesting to note that of the women patients a high proportion of those suffering from alcoholic addiction have undergone some major operation on their reproductive organs. Dr. Park points out with reference to drug addicts that thanks to the Dangerous Drugs Act, patients who are not doctors have little chance of relapsing, and he expresses the hope that as older addicts die off or are cured, drug cases should eventually become extinct.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Select Committee on Nursing Council Rules.

ON Wednesday, June 24th, a Select Committee of the House of Commons was appointed to consider the rules of the General Nursing Council with regard to the prescribed training for nurses and the reservation of seats on the Council for matrons. The following are the members of the Select Committee: Sir R. Barnett, Sir G. Berry, Mr. R. Davies, Mr. Fisher, Lieut.-Colonel Fremantle, Sir C. Forestier-Walker, Mr. G. Hurst, Sir R. Luce, Colonel Sinclair, Miss Wilkinson, and Mr. R. Wilson.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 24TH.

Institutional Treatment of Sleepy Sickness.

Dr. HADEN GUEST asked the Minister of Health whether any special institutional treatment was available for cases of encephalitis lethargica, and whether any special homes are available for cases of children permanently damaged by this disease.—Sir KINGSLEY WOOD replied: My right hon. friend is advised that no special institutional provision is required for cases of this disease in the acute stage, and that such cases may, in general, be properly admitted to isolation hospitals, infirmaries, or general hospitals. As regards the second part of the question, the provision of a special institution for the reception of children suffering from the after-effects of this disease, who cannot be admitted to mental hospitals, is now under consideration.

Proposed Removal of Bethlem Hospital.

Dr. HADEN GUEST asked the Minister of Health whether, in view of the proposed removal of Bethlem Hospital from Southwark to a site outside London, he proposed to call a conference of those interested in the matter with a view to the preservation of the site of Bethlem as a permanent open space.—Sir KINGSLEY WOOD replied: Inquiries made by my right hon. friend have not indicated that any useful purpose would be served by calling a conference, but further attempts will be made to see if this matter cannot be settled without pursuing the controversy which has arisen through a Parliamentary Committee.

Yaws in East Africa.

Colonel DAY asked the Secretary of State for the Colonies whether he was aware of any increase in the prevalence of yaws in East Africa; and, as its cure by intramuscular injections of bismutho potassium sodium tartrate was very inexpensive, being approximately one-tenth of a penny per injection, would he take steps to secure the coöperation of those responsible for the government of Kenya and Tanganyika in order that this bismuth preparation might become available in larger quantities.—Mr. AMERY replied: I am not aware of any increase in the prevalence of yaws in East Africa, but it is undoubtedly serious. The remedy mentioned in the question is referred to in the report of the East African Commission, where reference is made to the delay in utilising in Kenya the experience gained in Tanganyika. But the remedy has been in active use in Kenya for at least three years, and I do not think that any special action is necessary.

THURSDAY, JUNE 25TH.

Deaths from Insect Bites.

Mr. HERBERT WILLIAMS asked the Minister of Health how many deaths were caused in 1924 in England and Wales by the bites of insects.—Mr. N. CHAMBERLAIN replied: There were 12 deaths in England and Wales in 1924 which were caused, according to medical certificate or coroner's inquisition, by the bite of an insect.

Closing of Broad-street Pensions Clinic.

Captain HUDSON asked the Minister of Pensions if he would explain why disabled men were now being sent for treatment to the clinic at Bulinga-street, Millbank, who previously attended the clinic at Broad-street; and if, owing to the inconvenience which would be caused to the disabled men if the Broad-street clinic was closed, he would try to arrange that it should be kept open and the cases for treatment divided between the Bulinga-street and Broad-street clinics.—Major G. C. TRYON replied: The number of cases requiring only out-patient treatment is in the natural course diminishing, and in consequence, though every effort

is made to meet the convenience of pensioners, the clinic accommodation has necessarily from time to time to be reduced. The Holborn Clinic belongs to the British Red Cross Society and they have intimated that they cannot continue the clinic unless the number of patients is increased. With the general decline in the number of cases this is not possible and consequently the patients have to be diverted to the more permanent clinics of the Ministry—among others that at Bulinga-street, where I may say the facilities for all varieties of treatment and the means of access are particularly good.

Excessive Rates of Maternal Mortality.

Mr. GROVES asked the Minister of Health whether he had considered the report of the chief medical adviser for his department for 1924, in which it was stated that excessive rates of maternal mortality were found in the aggregate in most rural areas, such as Breconshire, Westmorland, Montgomeryshire, Radnorshire, and in highly industrial areas engaged in textile manufacture and coal-mining, and especially in such county boroughs as Halifax, Blackpool, Rochdale, Huddersfield, Swansea, Bradford, Bury, Oldham, Dewsbury, and Blackburn; and whether he proposed any special measures to afford the people of these areas additional medical or institutional treatment in order to remedy this state of affairs.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part the authorities of most of the areas mentioned are already taking steps, as a result of the issue of the circular to which I referred in my reply on May 20th, to provide additional facilities for the antenatal examination and institutional treatment of pregnant women, and the medical officers of my department pay special attention to these points on the occasion of their visits to these areas.

Panel Practitioners and Sight-testing.

Mr. BENNETT asked the Minister of Health whether he had issued an order that in future optical benefits might only be granted on the certificate of the panel practitioner and after sight-testing by a medical man; and, seeing that the general medical practitioner knew little or nothing of sight-testing, would he say whether he had received any representations on the subject from qualified opticians.—Mr. N. CHAMBERLAIN replied: The new model scheme for the provision of ophthalmic benefit by approved societies as an additional benefit contains a provision to the effect that, except in the case of repair or renewal of optical appliances, an applicant for the benefit must have obtained and furnished his society with a written recommendation from a medical practitioner. I have received representations on the subject both from bodies representing opticians and in the opposite sense from representatives of the medical profession, including ophthalmic specialists, and these representations have had due consideration.

Publication of Evidence given to Trevethin Committee.

Mr. BENNETT asked the Minister of Health whether he was aware that Colonel L. W. Harrison, of the Ministry of Health, at the Congress of the Royal Institute of Public Health at Brighton, on May 29th, objected to Mr. H. Wansey Bayly, hon. secretary of the Society for the Prevention of Venereal Disease, quoting from the evidence of witnesses before Lord Trevethin's Committee of Inquiry, on the ground that such evidence was confidential; whether the Ministry of Health had received from the Committee of inquiry any communication to the effect that the evidence of witnesses before that Committee would be treated as confidential; and, seeing that typewritten copies of evidence were being supplied on application to those who gave it without any stipulation being made that such copies were confidential, would he say what was the reason for the non-publication of the evidence before this Committee.—Mr. N. CHAMBERLAIN replied: The reply to the first part of the question is in the affirmative and to the second part in the negative. I understand that the Committee decided not to ask for the publication of the evidence.

Danger of Insecticides on Apples.

Colonel DAY asked the Minister of Health whether he was aware that Bordeaux mixture (sulphate of copper and lime), containing a proportion of arsenic, was being used as an insecticide on apples; and, as these apples were frequently eaten by children before being cleaned, would he take action to secure the removal of any insecticide deposit before the apples were packed or sold for human consumption.—Mr. N. CHAMBERLAIN replied: Yes, sir. The matter has been under the observation of my department for a number of years, but the quantities of arsenic which had been actually found on apples exposed for sale had been so minute as not to justify the institution of special restrictive measures.

Deaths from Ptomaine Poisoning.

Colonel DAY asked the Minister of Health whether he was aware of any increase in the number of deaths from ptomaine poisoning, following the eating of tinned foods; and whether the recommendations contained in the report of the Committee of Inquiry on Impure Foods were to be carried into effect.—Mr. N. CHAMBERLAIN replied: The number of deaths reported as due to ptomaine poisoning during the five years 1920 to 1924 was 32, 48, 22, 21, and 16 respectively. It is not possible to state in how many of these cases the poisoning was due to the eating of tinned foods, but the numbers can only be a small fraction of the totals already given. A draft of regulations to give effect to the principal recommendations of the Departmental Committee on Preservatives and Colouring Matters in Foods has been published, and I am now considering the form in which the regulations shall be finally made.

Tuberculous Cattle and Sheep.

Lieut.-Colonel HENEAGE asked the Minister of Health what percentage of cattle and sheep were found to be tuberculous when slaughtered for food, giving the percentage separately for bullocks, cows, and heifers.—Mr. N. CHAMBERLAIN replied: I regret that I cannot give the figures for the whole of the country. The figures given by the medical officer of health for the City of London as regards the Aldgate slaughter-houses (figures which are probably somewhat below the average for the whole country) are as follows:

	1923.	*1924.*
Number of bovine animals slaughtered ..	38,817	40,058
Percentage found to be tuberculous:		
All bovines	0·34	0·45
Bulls	2·40	4·40
Calves	0·04	0·04
Cows	25·45	28·00
Heifers	11·11	3·10
Oxen	1·20	2·00

Tuberculosis is scarcely ever found in sheep slaughtered for food.

MONDAY, JUNE 29TH.

Ambulance Committee's Recommendations.

Dr. LITTLE asked the Minister of Health whether the recommendations of the Ambulance Committee of King Edward's Hospital Fund have received his consideration; and whether he proposed to give effect to them.—Mr. N. CHAMBERLAIN replied: So far as these recommendations can be dealt with by administrative action they have been put into operation. So far as they require legislation I fear that they must await the general measure of Poor-law reform which I have in contemplation.

Health of Gold Coast Miners.

Mr. THURTLE asked the Secretary of State for the Colonies whether he had yet received the report upon the health statistics of the native mine workers in Gold Coast Colony; and whether it was proposed to publish this report.—Mr. AMERY replied: The report has been published on behalf of the Gold Coast Government by the Crown Agents for the Colonies, and copies may be purchased from them. I will place a copy in the library.

Medical Service in African Colonies.

Lieut.-Colonel ANGUS MCDONNELL asked the Secretary of State for the Colonies the number of qualified medical officers allowed for in the establishments of the West African Crown Colonies and East African Crown Colonies and Protectorates respectively; whether all the positions were filled; and, if not, what was the number under authorised establishment strength.—Mr. AMERY replied: The estimates for the four West African Colonies provide for a total of 246 qualified medical officers. There are at present 32 vacancies after allowing for selected candidates at present under instruction in tropical medicine. In the East African Medical Service, which includes the medical staff of Kenya, Uganda, Nyasaland, Zanzibar, Somaliland and Tanganyika, the authorised strength is 152. There are seven posts unfilled. The medical department of Northern Rhodesia has an establishment of 13 medical officers, and there is one vacancy at present.

Ambulance and First-aid Work at Wembley.

Colonel DAY asked the Parliamentary Secretary to the Overseas Trade Department how many trained nurses or trained staff, either men or women, were employed at the ambulance stations of the British Empire Exhibition, and what their remuneration was respectively; who was responsible for engaging them; how many voluntary or semi-trained men and women were employed in this ambulance or first-aid work; what was their remuneration or out-of-pocket expenses, and by whom were these amounts paid; and how many hours each respective class was expected to be on duty.—Mr. A. M. SAMUEL, Parliamentary

Secretary to the Overseas Trade Department, replied: I am informed by the British Empire Exhibition authorities that the following trained staff are employed at the ambulance stations of the Exhibition at the rates indicated:—One wardmaster and dispenser at £5 5*s.* per week; one assistant and dispenser at £4 4*s.* per week; one matron at £4 4*s.* per week; and one sister at £3 3*s.* per week. I understand that the wardmaster and the assistant were engaged by the Exhibition authorities, and the matron and sister by the joint committee of St. John's Ambulance and the British Red Cross Society, and that they work eight hours a day. The following semi-trained voluntary workers are also employed: 12 nurses, 45 orderlies, who are provided by the above-mentioned societies alternately a month at a time. I am informed that they work on five-hour shifts and receive an allowance of 2*s.* 6*d.* each per shift for expenses, which is paid by the Exhibition authorities. In addition to the above-mentioned staff there are three qualified medical practitioners.

Local Authorities and House Building.

Mr. RILEY asked the Minister of Health the number of local authorities which have built or are now building houses under the 1924 Housing Act; the number of houses sanctioned under that Act; and the weekly rents charged, exclusive of local rates, for such houses.—Sir KINGSLEY WOOD replied: Four hundred and fifty-nine local authorities in England and Wales have so far received approval to schemes under the Housing (Financial Provisions) Act, 1924, the number of houses authorised being 61,484—59,947 to be erected by the local authorities and 1537 by private enterprise. Of these 4428 had been completed by local authorities and 33 by private enterprise on June 1st; and 15,855 and 184 respectively were under construction at that date. I am advised that in general the rents charged approximate to the rents of houses erected under the Housing, &c., Act, 1923.

Accident in Ammonia Factory.

Miss WILKINSON asked the Home Secretary whether his attention has been drawn to the case of Mr. George Charles Bainbridge, who, as the result of a fall while employed at the works of the Synthetic Ammonia and Nitrates, Limited, of Billingham, was now detained in a mental institution; whether he was aware that no compensation has been paid and that the man was not in receipt of national health insurance; and whether, seeing that the man fell in a doorway near the carbon monoxide plant and that the laboratory at Harrogate, while unable to certify that Bainbridge had been gassed, did contend that he sustained concussion as the result of the fall, he would inquire into this case.—Sir W. JOYNSON-HICKS: I have made inquiries with regard to this case and am informed that after a full hearing the judge accepted the view that the man had been suddenly seized with an acute brain illness which caused him to collapse in the position in which he was found, and decided that his condition was not due to an accident arising out of and in the course of his employment.

TUESDAY, JUNE 30TH.

Ex-Service Men and Tuberculosis.

Brigadier-General BROOKE asked the Minister of Pensions whether he was aware that it was the custom to give ex-Service men whose tuberculosis was admitted as attributable to war service only four weeks' institutional treatment; and, seeing that satisfactory results could not be expected within such a limited period, if he would grant longer periods of treatment.—Lieut.-Colonel G. F. STANLEY replied: My hon. and gallant friend has, I fear, been seriously misinformed. It has been the policy, both of my right hon. friend and of his predecessors, in coöperation with the Ministry of Health, to secure as far as possible preferential treatment for disabled men suffering from tuberculosis due to their war service, and I am glad to say that the average period of in-patient treatment in these cases is not one month, but four months.

SHEFFIELD ROYAL INFIRMARY.—Notwithstanding that 42 new beds have been in daily occupation from the beginning of the year, the waiting-list continues to grow and now numbers 1750. A further 33 beds are being opened immediately.

LEIGH INFIRMARY EXTENSIONS.—The foundation-stones of the Leigh Infirmary extension and the new nurses' home will be laid on July 25th. The total cost for the extensions and for the purchase of additional land, furnishing, and other expenses will be about £30,000. Towards this sum about £23,000 has been collected during the past 18 months. An effort is to be made in the town to raise £7000 in order to open the buildings free from debt.

NATIONAL PHYSICAL LABORATORY: THE ANNUAL INSPECTION.

AT the invitation of the President of the Royal Society a large number of people gathered at Teddington on June 23rd for the annual inspection by the General Board of the National Physical Laboratory. This occasion affords to many who are interested in science a valuable opportunity to gain an insight into the work of a great scientific institution. The march of science is so rapid that each year sees the expansion of the laboratory which is so essential if progress is to be maintained. Of outstanding interest in this growth may be mentioned the new high voltage laboratory now under erection, which will house the 1,000,000-volt transformer and thus render possible a study of the problems of high voltage electric transmission for which there is an increasing demand. The erection of an adequate laboratory for the Physics Department, at present distributed in three separate buildings, will begin this year, and marks but another step towards increased efficiency. The visitor this year is struck by the increasing application of X rays for the elucidation of the problems presented by the various materials used in industry and science. The medical profession realised from the moment of their discovery the flood of light X rays could throw upon the internal conditions of the human body, and slowly the rays are being turned on all matter revealing information of far-reaching importance.

An inspection of the *Radiology Department* of the laboratory shows how varied are the uses to which X rays are put. The structure of several metals and alloys have been studied by the X ray spectrometer. Lane photographs have been taken of diamonds used as pivot bearings with a view to discovering the conditions necessary to good bearing. Examination for flaws in metals and castings is carried out with a high voltage X ray installation, whilst the rapid elimination of soda glass clinical thermometers is effected by subjecting batches of thermometers to a fluoroscopic test. The increasing application of X rays has led to improvements in X ray tubes and in the methods of obtaining the high vacuum necessary to them. In this work of improvement the Radiology Department continues to play its part. Work in high vacuum research is being continued and an all-steel vacuum pump has been evolved which is compact, simple in use, and possesses distinct advantages over the earlier form produced by the laboratory. Experiments with hot cathode metal X ray tubes of high output are in progress. An experimental tube capable of carrying continuously 30 m.a. at 70 kilovolts has been designed. The tube is permanently attached to a vacuum pumping apparatus and means are adopted whereby targets of different metals may be easily fitted to the tube. The rapid simplification of vacuum pumps leads one to think that soon they will be more widely used in conjunction with gas X ray bulbs to maintain a constant gas pressure under running conditions and thus remove the main objection to this type of tube. Researches on the scattering of the gamma rays of radium, which led to important results last year, are being continued, and measurements of the absorption and scattering coefficients of X rays are being made. The Radiology Department is noteworthy for its complete equipment for routine measurements, enabling on the one hand the accurate determination of the radium contents of tubes and applicators, and on the other the investigation of the lead equivalent and homogenicity of X ray protective materials.

The *Department of Sound* continues to make good progress in the photography of sound by the spark method, and interesting results were shown of the way in which sound is reflected from various types of reflector. The study of the transmission and reflection of sound by partitions is being continued and special chambers have been erected for the work. The ripple-tank method of investigating

features of wave reflection has been considerably improved by providing the lamp illuminating the tank with a revolving shutter, which works in synchrony with the tuning-fork vibrator. The intermittent illumination of the tank results in a fascinating stationary picture of the ripples and enables one to study with ease the refraction of waves passing through different thicknesses of liquid. Considerable improvements have been effected in apparatus used for measuring carbon dioxide in the air of closed spaces such as the holds of ships. Excessive quantities of carbon dioxide have been found harmful to consignments of fruit, and the need for rapid and simple estimation of the gas has been urgent. Several types of dial-recording instruments have been made, which should find a much wider field of service than that for which they were originally designed.

In the *Department of Heat* the number of clinical and precision mercury thermometers tested remains at approximately the same level as in previous years. In parallel with this testing work, research is being carried out in platinum resistance thermometry and a new type of resistance bridge is being used for the purpose, which allows thermometric measurements of the highest precision to be made.

Of the remaining *Departments of Aero-dynamics, Metallurgy, Metrology, Wireless Telegraphy and Electrotechnics*, the last two are perhaps of more immediate medical interest. That arrangements have been made by the Electrical Department for the measurement of direct currents up to 10,000 ampères, and that a 5000-volt direct current set has been installed for the testing of apparatus used in railway equipment is indicative of the wide range of measurement catered for at the laboratory. That the National Physical Laboratory is largely concerned in the pursuit of accuracy is well illustrated in the comparatively new methods for the measurement of radio frequencies, which by the use of quartz resonators give an accuracy of 1 part in 10,000 for a range of wave-lengths from 25,000 to 30,000 metres.

The National Physical Laboratory is to be congratulated upon its record for the past year and upon the high degree of efficiency and accuracy it has attained in all departments. The laboratory is playing a worthy part in the progress of the national industries.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, July 6th, to SATURDAY, July 11th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine and open to members of the medical profession. Thursday, July 9th, at 5.30 P.M., Mr. G. Grey Turner: Gallstone Ileus—A Pitfall for the Practitioner.—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.—Special Course in Diseases of Children daily from 10 A.M., morning and afternoon sessions covering demonstrations, ward round, out-patient departments, and operations. (First week.)—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Special Course in Urology. Clinical work every afternoon throughout the week. Lectures: Monday, Mr. J. Alban Andrews: Genito-Urinary Tuberculosis; Tuesday, Mr. Swift Joly: Urinary Calculi; Wednesday, Mr. Clifford Morson: The Technique of Renal Surgery; Thursday, Mr. F. J. F. Barrington: Non-Tuberculous Infections of the Urinary Tract; Friday, Sir John Thomson-Walker: Urinary Obstruction.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, July 7th.—4.30 P.M., Dr. L. R. Yealland: The Diagnosis and Treatment of Functional Nervous Disease.

FRIDAY.—4.30 P.M., Mr. W. Ibbotson: Hoarseness, its Causation and Treatment.

Daily.—Clinics in General and Special Departments. Demonstrations, Operations, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 6th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Donald Armour: Operations.

TUESDAY.—11 A.M., Dr. McDougal: Electrical Dept. 3 P.M., Mr. Tyrrell Gray: Operations. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Dowling: Skin Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Ward. 12 noon, Surgical Registrar: Surgical Pathology.

FRIDAY.—12 noon, Dr. Pritchard: Modern Methods of Medicine. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept. 4 P.M., Dr. Archer: Bio-chemistry.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C. 2.

TUESDAY, July 7th.—5 P.M., Dr. Graham Little, M.P.: Occupational Dermatoses.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, July 9th.—5 P.M., Mr. Lane Roberts: Clinical Features of Obstructive Labour.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, July 9th.—4 P.M., Dr. Robert Hutchison: Diet after the Period of Infancy.

Appointments.

HODGSON, H. K. GRAHAM, M.B., B.S. Durh., D.M.R.E. Camb., has been appointed Honorary Radiologist, King's College Hospital.

LANE-ROBERTS, C. S., M.S. Lond., F.R.C.S. Eng., Obstetric Surgeon (with charge of out-patients), Royal Northern Hospital, Holloway-road.

MOFFATT, JAMES, M.B., Ch.B. Glasg., Medical Officer of Health to the Durham Rural Council and Medical Officer to the Houghall Isolation Hospital.

ROBINSON, W., M.D., Ch.B. Leeds, Medical Superintendent of the City of London Mental Hospital at Stone, near Dartford.

St. Mary's Hospitals, Manchester: BRIDE, J. W., M.D. Lond. and Manch., Honorary Assistant Surgeon; FERGUSON, R. A., M.B., Ch.B., and JOHNSTONE, MARGUERITE, M.B., Ch.B. Birm., House Surgeons at Whitworth-street West Hospital; SHEEHAN, EILEEN, M.B., Ch.B. Manch., and HUMBLE, GRETA E., M.B., Ch.B., House Surgeons at High-street Hospital.

Salford Royal Hospital: WARBURTON, EDWARD J., M.R.C.S., L.R.C.P. Lond., House Surgeon; ALLAN, MALCOLM, M.B., Ch.B. Glasg., Casualty House Surgeon; MAGEE, ANDREW V., M.B., Ch.B. Glasg., House Physician.

University of Manchester: DIGGLE, F. HOLT, F.R.C.S., and LANGLEY, G. J., M.D. Lond., Hon. Assistant Lecturers in Physiology; BRAMWELL, J. CRIGHTON, M.D. Manch., Hon. Assistant Lecturer in Experimental Physiology.

Certifying Surgeons under the Factory and Workshop Acts: SMITH, J. W., M.B., Ch.B. Manch. (Borrowash District, Derby), and DUNCAN, A. G. B., M.D. Aberd. (Kidsgrove District, Stafford).

Vacancies.

For further information refer to the advertisement columns.

Birmingham Union, Western-road House and Children's Receiving Homes—Res. M.O. £575.

Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—Res. M.O. £250.

Bradford Royal Infirmary.—Res. Surg. O. £250.

Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.

Bury County Borough.—Asst. M.O.H., &c. £600.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. at rate of £200.

Croydon County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Eastbourne Royal Eye Hospital.—Hon. Ophth. S.

Edinburgh University.—Chair of Public Health. £1000.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. for six months. £50.

Lanark County.—Bacteriologist and Pathologist. £750.

Liverpool, Brownlow Hill Infirmary.—M.O. £600.

London Hospital Dental School, E.—Asst. Dental Anæsthetists. £25 each.

London Hospital, E.—Two Hon. Asst. Aural S.'s. Also First Asst. to one of the five Surg. Firms. £400.

London Lock Hospital, 283, Harrow-road, W.—Second H.S. £150.

London School of Hygiene and Tropical Medicine.—Four Research Studentships in the Division of Tropical Medicine and Hygiene. £250.

Manchester, Ancoats Hospital.—Hon. Radiologist. Also H.S. at rate of £100.

Manchester, Crossley Maternity Hospital, Ancoats.—Half-time Res. M.O. at rate of £50.

Manchester, St. John's Hospital for the Ear, St. John-street.—Hon. Asst. S.

Manor House Hospital, Golder's Green, N.W.—H.S. £200.

Mansfield Borough.—Asst. M.O.H. £600.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £150.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.

New Zealand Government, Mental Hospitals Dept.—Two Asst. M.O.'s. £615.

Norwich, Norfolk and Norwich Hospital.—Res. Anæsth. £150.

Notts Education Committee.—School Dentist. £500.

Royal College of Physicians, Pall Mall East, S.W.—Streatfeild Research Scholar. £250.

Royal College of Surgeons of England.—Examiner in Dental Surgery.

Royal Free Hospital, Gray's Inn-road, W.C.—Obstet. Asst. £50. Obstet. H.S. and Gynæcol. H.S. Also H.P.

Royal Northern Hospital, Holloway, N.—M.O. in charge of Electro-Therapeutic and Massage Dept. 100 guineas. Also S.

Sheffield University and Jessop Hospital for Women.—Asst. Path. and Demonstrator of Anatomy. £300.

Staffordshire Education Committee.—Asst. Sch. Med. Inspector. £600.

Stafford, Staffordshire General Infirmary.—H.P. £150.

Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst Bacteriologist. £E. 720.

Winchester Royal Hampshire County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment at Horncastle, Lincs.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Districts of the Consett and Durham County Courts (Circuit No. 2). Applications should reach the Private Secretary, Home Office, London, S.W., not later than July 18th.

Births, Marriages, and Deaths.

BIRTHS.

PHILLIPS.—On June 25th, at "Aspland," Norwich, the wife of Captain Phillips, D.S.O., M.C., R.A.M.C., of a daughter.

POOLE.—On June 19th, at South Wigston, Leicester, the wife of Frank S. Poole, M.R.C.S., L.R.C.P., of a son.

POWELL.—On June 17th, at Lower Baggot-street, Dublin, the wife of Lieut.-Colonel W. J. Powell, I.M.S., of a daughter.

MARRIAGES.

COOK—GRIFFITH.—on June 25th, in London, Leslie Colin Cook, M.R.C.S., L.R.C.P., to Barbara, eldest daughter of Lieut.-Colonel E. H. Griffith, C.B.E., of Ennismore-gardens, S.W.

JEPSON—DEFRIES.—On June 13th, at St. Mary Abbot's, Kensington, Dr. A. C. Jepson, of Bromley, Kent, to Anne Amelia, younger daughter of Mrs. Defries, of Woodlands-avenue, Finchley, N.

PULFORD—THOMAS.—On June 20th, at the Presbyterian Church, Roath Park, Cardiff, Herbert Pulford, M.A., M.B., B.C. Camb., L.D.S. Eng., to Gertrude Thomas, of Cardiff.

DEATHS.

ANDERSON.—On June 28th, suddenly, Dr. Harry Græme Anderson, M.B.E., M.D., F.R.C.S., of Harley-street and Maida-vale.

DALBY.—On June 23rd, at Brighton, John Lyttleton Dalby, M.R.C.S., L.R.C.P., aged 55.

LEON.—On June 24th, in London, George Alexander Leon, M.D., aged 68.

ROE.—On June 23rd, at Liverpool, Lieut.-Colonel W. F. Roe, D.S.O., T.D. (R.A.M.C.T.), aged 54.

RYAN.—On June 24th, Charles E. Ryan, M.D., F.R.C.S.I., J.P., Glenlara, Tipperary, aged 75.

STEDMAN.—On June 24th, at Leighton Buzzard, Percy Taylor Humphrey Stedman, M.B. Lond., M.R.C.S., J.P., aged 48.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HOSPITALS AND THE MILK-SUPPLY.*

BY R. VEITCH CLARK, M.B., B.SC. EDIN., D.P.H.,
MEDICAL OFFICER OF HEALTH TO THE CITY OF MANCHESTER.

THE milk-supply is of special importance in hospital work as it forms the main food of patients in the crucial period of their illness. The three main qualities of a good milk-supply are: (*a*) the maintenance of a minimum standard of chemical composition—fats, non-fatty solids, &c.; (*b*) the possession of what are known as the biological properties of milk—i.e., the presence of vitamins, immune bodies, &c.; (*c*) the maintenance of a satisfactory standard of bacteriological purity.

A great deal of work on the immune bodies conveyed in milk has been done both in human milk and in cow's milk. The immunities possessed by the newly born child are very markedly affected by the milk ingested and adults will unquestionably be similarly affected. There is no doubt that in the fight of the body against illness such properties in the food do at times determine the swing of the balance towards recovery when it would otherwise turn against the patient, with general illness as well as with septic and specifically infectious conditions.

Vitamin Content of Milk.—Bacterial Contamination.

Milk contains all three of the main groups of vitamins. The constitution of these substances is not yet known; they can only be recognised by their absence—i.e., by the consequences of their deficiency in food. It would be unjustified to assume that their action is confined to the one avenue suggested by the specific conditions set up by that deficiency. Indeed, the group of fat-soluble vitamins clearly exert a profound influence on the growth and activity of the whole of the bodily organism.

Milk is one of the best media for the growth of practically all of the well-known bacteria, and the processes involved in its production and distribution for general consumption expose it to a degree of contamination which makes it perhaps the least cleanly food in general use. The infection of milk by the bacteria producing the acute infectious fevers, such as enteric fever, scarlet fever, and diphtheria, results in such large and rapidly spreading outbreaks of these diseases, and the danger to the public welfare is so obvious and now so well recognised, that immediate and energetic measures are always taken to eliminate the infected milk from general use and to discover and remove the source of infection. These infections are not, however, constant in milk; they arise as a direct contamination from human sources which, with modern means of investigation, can practically always be discovered. The regularly occurring bacterial contamination of milk is of much greater significance.

Out of 75 samples taken from the general milk-supply of Manchester during 1922–25 tubercle bacilli were found in 12; but no tubercle was present in any sample of the hospital milk. The actual number of bacteria is very greatly less in the latter than in the former, and this diminution of bacterial content is the more striking in that the hospital milk-supplies all come from considerable distances and there is no ice carriage of any description supplied. The conditions only differ from those of the general milk distribution to the public, in that the milk churns have overlapping lids and are sealed at the farm. Over a period of 23 years the results of the examination for tubercle in milk sent to Manchester reveals an average infection with this condition of 9·48, or nearly 1 in 10 of the milk supplied. The incidence of bovine infection varies considerably according to the site affected in man, but to say that tuberculosis of bovine origin accounts for over 50 per cent. of the non-pulmonary tuberculosis of the country is making an extremely conservative statement. It is much more likely that it will account for at least 70 per cent. of the non-pulmonary type of tuberculosis. In the city of Manchester the annual average of non-pulmonary tuberculous conditions notified in persons under 15 years of age during the last 11 years was 494. There is, therefore, a certainty of at least 250 persons being annually infected with tuberculous milk to such an extent as to produce active disease in Manchester alone. These are the cases that are known to the public health authority, and there is no doubt that a very considerable percentage do not come under observation. A significant point is that owing to the impossibility of proper veterinary supervision of the farms during the war the milk did, in these years, show the occurrence of the infection of tuberculosis. This is clear evidence that adequate supervision of

* Abstract of a paper read at the British Hospitals Association Conference held at Manchester on June 25th, 1925.

farms can eradicate tubercle from the milk-supply. Ordinary careful, skilled supervision can reduce the bacterial contamination of milk a long way towards the standard which has been set by the Ministry of Health in the best of the graded milks established under the Milk (Special Designations) Order, 1923, made under the Milk and Dairies (Amendment) Act, 1922.

The importance of a relatively small bacterial contamination lies in two factors: (1) that bacteriological examination of milk is an extremely exacting gauge of the cleanliness of milk production and milk handling, and (2) that it is an index whereby a reasonable margin of safety can be assured in relation to the incidence of such intestinal diseases as acute or epidemic diarrhœa, and the intestinal troubles which are characteristic of infancy and old age, and the weaknesses of severe illness. That diarrhœa can be controlled by proper handling of milk has been abundantly proved during recent years, more especially in connexion with the remarkable fall in epidemic diarrhœa amongst infants, which is without doubt mainly attributable to the prevention of infection of milks and infant foods, or the measures taken to destroy that infection before such foods are administered to the children.

Over 20 years ago an inquiry was conducted in Yorkshire as to the main source of infection of milk with intestinal organisms, an investigation which was carried out on an extensive scale and with the most meticulous care, and the results showed that the primary and major infection occurred in the cowshed. It is exactly this source of infection that is controlled by the supervision of the source of milk supplied to our hospitals. It is particularly one which can be watched by every hospital authority in the country, and by so doing, and letting it be known generally that it is done, a unique opportunity is afforded to hospital boards of management to act as leaders of thought and action in the public welfare in this matter.

The Hospital Milk-supply in Manchester.

The municipal hospitals of Manchester obtain a satisfactory milk-supply by inserting into the conditions of the contract the following clauses:—

The milk shall contain not less than 3·25 per cent. of fat and 8·75 per cent. of solids (not fat), and be free from the infective matter of tuberculosis.

The milk must be subject to the approval of the Committee, who will return, at the expense of the contractor, any milk found on delivery to be inferior in quality or in any way unsuitable for the purpose intended, and the contractor will be required to supply other milk of approved quality in place thereof. By way of additional precaution the Committee reserve the right, if they are dissatisfied with the milk delivered or offered for delivery, by resolution, absolutely to cancel the contract.

The milk must be placed in cans and sealed by the farmer before being despatched by train, and on arrival at the station the milk must be especially and immediately despatched to the hospitals, and not taken to any intermediate place. The herd and premises must be at all times open to inspection and examination by the Committee's veterinary officer.

The farm from which the milk is supplied must be kept in a sanitary condition as well as the appliances used, and the process adopted in handling the milk must be satisfactory to the corporation.

There has never been at any time difficulty in getting tenders sent in under these specific conditions, and there is always considerable competition. The price paid for the milk is, as a rule, slightly in excess of the ordinary commercial sale price obtained by the farmer, the extra being paid in respect of special services rendered by the farmer in guaranteeing a definite quantity daily, rather than in respect of any particular condition which the contract places upon him in the manner of milk production. There can be little doubt that if the conditions which Manchester imposes with a view to obtaining a really clean and tubercle-free milk were generally practised throughout the country there would not be any genuine grounds for increase on this account in the price of milk supplied to the public in general.

Farm Conditions.

The veterinary services are supplied to the farmers free, the supervision being carried out by the veterinary surgeon on the staff of the public health department specifically in charge of the city's milk-supply. Such a supervision is unquestionably a public health measure and should be available to the farming community throughout the country, just as the services of the preventive medical staff of the country are available to the public in connexion with general infectious disease. This type of work is clearly undertaken in the interests of the nation at large and should be met out of the national and local purse.

The farms to which the contract is given are inspected by the veterinary surgeon once or twice per month. The herds are examined and all the conditions under which the milk is produced are subjected to careful scrutiny. The churns are of an approved type, with overlapping lid, and are periodically inspected for their soundness and they are each sealed with a red seal before being despatched. In each farm an installation of steam sterilisation for the churn is required. Overalls are worn by the milkers and strict personal cleanliness is required both in the milking and the grooming of the cows. The evening and morning milks must not be mixed. The relationship of the veterinary surgeon to the farmers has always been of an extremely friendly nature and much valuable help and advice is available to the farmer in consequence of this amicable coöperation. Any matters affecting the welfare of the herd, including the feeding, and breeding for increased milk production, have always been an essential part of the work of the veterinary surgeon. In one notable instance the advice as to breeding has resulted in an increase of the yield of milk from about 450 gallons per cow per annum to 700 gallons per cow per annum. No farmer who has had the contract with the hospital has failed to achieve prosperity in his work, the continuous professional advice and help which the farmer has received having reduced sickness amongst the herds.

A valuable aid to the production of a clean and non-injurious milk-supply to the hospitals has been introduced by the practice of supplying to each farmer contracting for the hospitals' supply a copy of the results of the bacteriological examination of all the hospitals' milks, each source of supply being shown separately, but only the individual farmer's own name being mentioned. This stimulates a healthy competition amongst the farmers without giving any detailed information as to the results of the working of farms other than that of the recipient. Unquestionably, raw milk, produced under the best possible conditions, contains all the valuable biological and other ingredients which make milk par excellence the food of infancy, of old age, and of the sick, and it is clearly the duty of every public body to provide for the infirm in hospitals a food supply which is by nature especially fitted to tide them over the dangerous crises of their illnesses. This milk should contain to the fullest possible extent the immune or protective bodies and the vitamins, and any unnecessary and possibly dangerous bacterial contamination should be eliminated.

INCOME-TAX CONCESSION: DEPRECIATION ALLOWANCE ON MOTOR-CARS.

THE Government has now conceded the long-outstanding claim for depreciation and/or obsolescence in respect of motor-cars used by medical men. It will be remembered that on two occasions recently we pointed out the existence of a curious anomaly. The right to claim car wear and tear was confined to traders, and a doctor, whose practice equally necessitated the use of a car, could not claim the same allowance. As long ago as 1920 a Royal Commission recommended that the allowance should not be restricted to traders, and this overdue concession has at last been granted. In future medical men will be allowed each year a percentage of the written-down value of the motor-car. The allowance is usually 20 per cent. and is deducted not from the year's profits, but from the assessment average based on the preceding three years. In the event of a car being wholly dispensed with and replaced by another an allowance is made against that year's profits representing the cost of the car replaced after deducting (1) the total amount of any allowance made for wear and tear, and (2) any sum realised by the sale.

A QUEER STORY.

A CORRESPONDENT writes with indignation of a story entitled "On the Table," which appeared in *Truth* for June 24th. The gist of the story can be told shortly. Two quite recently qualified medical men, one of whom bears the well-known name of a living surgeon, share the operative work of a hospital, each of them alternately operating and giving the anæsthetic. The anæsthetist for the time being, giving chloroform and ether to a feeble old man with malignant gastric ulcer, lets his attention lapse, and finds that the patient has stopped breathing, and is in fact dead. The thrill of the story then occurs.

"He saw with appalling clearness what would inevitably happen. A death like this, actually upon the operating table, could never pass without an inquest, and an inquest meant the press. In the fraction of a second he saw it all—the headlines, the scandal, the inspired articles demanding protection for the public that could not protect itself, the verdict. That would be favourable, of course, but what would the great British public care for that beside the scandal? It must injure the profession; it must injure the hospital. . . . It was a thing too monstrous to contemplate; by some means or other it must be prevented."

To avoid all this the anæsthetist pretends to surgeon, sister, and nurse that the patient is still living; his abdomen is hastily sewn up, and he is taken back to the ward, artificial respiration being applied the while, the anæsthetist alone keeping his hand on the pulse. Only after return to the ward does he admit that there is no pulse to feel. "I am sorry to say," he says, "that this man has died." "Devilish

lucky for us," the surgeon rejoins, "that fellow did not die on the table."

It is quite wrong to suppose that the patient's death in bed subsequent to the operation would avoid the necessity of informing the coroner. The crucial point, of course, is not where the patient died, but whether he was still under the anæsthetic. Newly qualified house surgeons at hospitals in this country do not perform major abdominal operations. No doubt the attention of a house surgeon, as of any other human being, may lapse sometimes, but this simply could not occur *during* the administration of an anæsthetic. The story is written by someone without adequate knowledge.

THE TRAFFIC IN WOMEN AND CHILDREN.

THE presidents of the great women's associations throughout the world have been circularised with an inquiry as to the conditions obtaining in their respective countries in regard to the traffic in women and children. The League of Nations has now published a summary of the replies received, prepared by Mme. Avril de Sainte Croix. The answers reveal unanimity of opinion throughout the world and a general sense of need for coördination of preventive work. Its contents are already too condensed to be abstracted here and the pamphlet should be consulted by all interested in the subject. Information is given of the conditions of women in South Africa, Austria, Belgium, Canada, Denmark, America, Finland, France, Great Britain, Hungary, Greece, Latvia, New South Wales, Norway, Holland, Poland, Portugal, and Czecho-Slovakia.

AN IMPROPER SUGGESTION.

A MEDICAL man sends us a letter which he has received from the patentees and sole makers of a new self-adjusting truss for hernia, stating that several of these trusses have recently been sold direct to doctors, and have, they are assured, given complete satisfaction to the wearers. "We shall be happy," the letter concludes, "to send the truss quite free of expense for your inspection and to allow you 15 per cent. on sales." The suggestion in the last sentence is improper. The sale of any appliance on a doctor's recommendation is dependent on the patient's belief that the recommendation is based solely upon the merits of the article recommended.

INCOME-TAX ALLOWANCES.

To the Editor of THE LANCET.

SIR,—I am quite sure in my own mind that medical practitioners often overpay income-tax, and I think that here THE LANCET might be of assistance. Would it be possible to ask readers to send for your private information—unless no objection to publicity was mentioned—a list of the various allowances made to them by their local inspectors? The capricious nature of the demands made would then, in my opinion, become clear, as well as the fact that they had not infrequently been met without protest. If you could give help to readers, based on such evidence in reply to definite questions, we should many of us be very much obliged.

I am, Sir, yours faithfully,
July 1st, 1925. A MEDICAL PRACTITIONER.

AN UNREGISTERED APPLICANT.

To the Editor of THE LANCET.

SIR,—I understand that advertisements for an assistant or a locum tenens have been answered by Mr. K. R. G. Shaw. Practitioners should be warned that, before engaging him, it is desirable that inquiry as to his registration should be made at the office of the General Medical Council.

I am, Sir, yours faithfully,
NORMAN C. KING,
Registrar, General Medical Council.

44, Hallam-street, Portland-place, London, W.,
June 26th, 1925.

COMPULSORY ISOLATION OF INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—Quite recently in discussion I learned from a medical man in a rural district, and also from a member of a rural district council, that medical men possessed no power in rural areas to segregate cases of dangerous disease. I also obtained evidence that doctors and sanitary inspectors who had provided facilities for the removal to isolation hospitals of dangerous infectious cases were powerless in the face of ignorant opposition offered by parents and others It may be news to the public in general, and to some member of the medical profession, that doctors actually possess the requisite powers under a 50-year-old Act of Parliament.

For your information I beg to quote from a letter received by me from the Secretary of the Ministry of Health, dated June 19th, as follows:—

"I am to state that patients suffering from any dangerous infectious disorder, whether in urban or rural districts, can only be removed compulsorily to hospital in accordance with the provisions of Section 124 of the Public Health Act, 1875. That section provides for the compulsory removal of patients in certain circumstances by an order of a justice on a certificate signed by a legally qualified medical practitioner. With regard to the alleged failure to isolate patients treated in their homes, I am to refer you to Section 126 of the Public Health Act, 1875, under which, in the case of any dangerous infectious disorder, penalties are prescribed for the exposure, without proper precautions, of infected persons."

I am, Sir, yours faithfully,
HERBERT MOORE PIM.

Cley, Norfolk, June 22nd, 1925.

*** It should be common knowledge in the health service that Section 124 of the Public Health Act, 1875, allows a justice's order to be obtained for persons "without proper lodging or accommodation," and a higher court has decided that magistrates in considering "proper accommodation" may pay regard to "means of isolation." This section has been used for the compulsory removal of badly-housed cases of scarlet fever and typhoid, but the mere threat to use it is usually sufficient.—ED. L.

SALE OF BIOLOGICAL DRUGS UNDER LICENCE IN THE U.S.A.

THE issue of *Public Health Reports* for May 29th, 1925, issued by the United States Public Health Service, contains a revised table of the establishments holding licences issued by the Treasury Department in accordance with an Act of Congress of July, 1902, entitled "An Act to regulate the sale of viruses, serums, toxins, and analogous drugs in the district of Columbia, to regulate inter-State traffic in said articles, and for other purposes." The licences granted do not imply an endorsement of the claims made by the manufacturers, but the granting of a licence does mean that inspection of the establishment concerned and laboratory examinations of samples of its products are made regularly to ensure the observance of safe methods of manufacture, to ascertain freedom from contamination, and to determine the potency of those drugs for which standards or tests have been established. The American licensed establishments in this list number 36. Of foreign establishments the *Report* enumerates the following, in each case specifying the products for which licences have been issued.

Institut Pasteur de Paris. Diphtheria antitoxin; tetanus antitoxin; anti-anthrax serum; anti-dysenteric serum; anti-plague serum; anti-streptococcic serum; bacterial vaccines made from cholera vibrio, plague bacillus, *Staphylococcus albus*, and *Staph. aureus*.

Farbwerke Hoechst (vorm. Meister, Lucius and Brüning), Hoechst am Main. Diphtheria antitoxin; tetanus antitoxin; anti-streptococcic serum; normal horse serum; tuberculin old; tuberculin T. R.; tuberculin B. E.; tuberculin B. F.; bacterial vaccines made from cholera vibrio, gonococcus, *Staphylococcus albus*, *Staph. aureus*, and *Staph. citreus*; typhoid bacillus; sensitised bacterial vaccine made from typhoid bacillus; arsphenamine; neoarsphenamine; sodium arsphenamine; silver arsphenamine; neosilverarsphenamine; sulphoxylarsphenamine.

E. Merck, Darmstadt. Tuberculin ointment (Moro).

Connaught Antitoxin Laboratory, University of Toronto, Canada. Diphtheria antitoxin; tetanus antitoxin.

Les Etablissements Poulenc Frères, 92, Rue Vieille-du-Temple, Paris, III. Bacterial vaccines made from gonococcus, *Micrococcus tetragenus*, pertussis bacillus, *Staphylococcus albus*, *Staph. aureus*, and *synococcus*.

Laboratoire de Biochemie Médicale, 92, Rue Michel-Ange, Paris. Sulpharsphenamine.

Istituto Sieroterapico Milanese, Milan. Anti-anthrax serum, bacterial vaccines made from gonococcus, pneumococcus, *Staphylococcus albus*, *Staph. aureus*, *Staph. citreus*, and streptococcus; neoarsphenamine. Selling agents for the United States: Neother Products Co., 50, Union-square, New York City.

Boots Pure Drug Co., Ltd., Nottingham. Arsphenamine Diglucoside.

Etablissements Mouneyrat, Villeneuve-la-Garenne, Seine. Phospharsphenamine.

Institut National de Vaccinotherapie, 26, Rue Pages, Suresnes (Seine): Bacterial vaccines made from colon bacillus, enterococcus, Friedländer bacillus, *Micrococcus catarrhalis*, *Micrococcus tetragenus*, pneumococcus, *Staphylococcus albus*, *Staph. aureus*, and streptococcus.

Behringswerke, A. G., Marburg-am-Lahn. Bacterial vaccines made from gonococcus, *Staphylococcus albus*, and *Staph. aureus*.